cyclone
• • • • • • • • • • •

Perf/x
MIDI Performance Effects

by **Oberheim**

Oberheim.
732 Kevin Court
Oakland, CA   94621

Contents

Chapter 1
Welcome

Congratulations on your purchase of the Cyclone, the newest of Oberheim's MIDI Performance instrument line, Perf/x. The Perf/x line was created with the intention of supplying the modern musician with time and labor-saving devices that simplify the ever increasing complexity of today's music systems, while also providing all-new performance and programming controls that allow your creativity to flourish in areas you might never even have thought about.

The Cyclone integrates the concepts of arpeggiation, sequencing, and MIDI rhythm driving all in one package. It combines traditional arpeggiation and sequencing capabilities with entirely new performance techniques, programmability, and synchronization. One innovation is the ability to provide **independence of rhythm and pitch**, and to provide interactive control of both from the keyboard. Its 16 ROM and 16 (expandable to 83) RAM Programs allow you to pre-program pitch and rhythm events that will play simultaneously or independently, dual keyboard ranges, doublings, transpositions, tempi, MIDI assignments and many other parameters.

The arpeggiation section is without precedent, allowing for not one, but two independent keyboard ranges as well as recorded information. There are eight transposition stages per Program, each stage having it's own number of repeats, inversions, or programmable recursions. In addition to steady pulses you can program your arpeggiation rhythm. Instead of single note lines the arpeggios can now consist of chords as well. The possibilities for live performance are endless as all parameters can be altered "on-the-fly", making the Cyclone the creative improvisor's dream come true.

Add to these the ability to use your Cyclone as a master MIDI clock, fully capable of live "human feel" tempo changes using the Tap Tempo pedal. That's just one of the 9 modes your 8 independently programmable pedals are capable of.

This manual provides both an introductory tutorial and a complete reference to the information for use once you are familiar with the overall operation of the Cyclone. We hope that you enjoy this extraordinary instrument and recommend (as always) that you read this manual in it's entirety.

Thank you for your investment in the State of the Art. It just got better.

Chapter 2

Liftoff!...
A Quick-Start Guide to the Cyclone

This section explains how to get up and running (without getting into serious programming
or editing), by taking advantage of the 16 Factory Programs shipped with the Cyclone.
Each Factory Program behaves in a different way, which provides the ability to try out
many of the Performance Effects available with the Cyclone in a short time.

2.1 SETUP

Before you turn anything on, do the following —
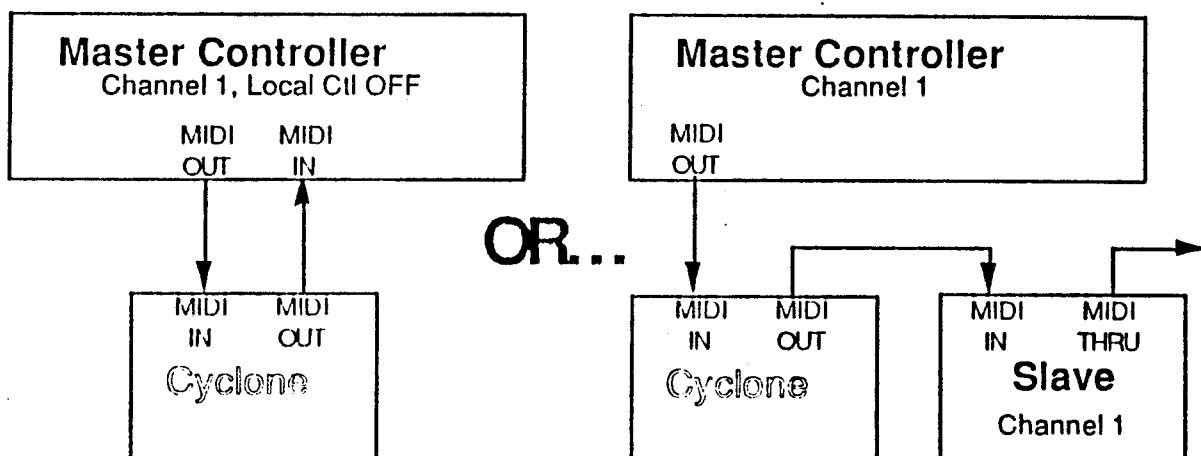
Master Controller		Master Controller	
Channel 1, Local Ctl OFF		Channel 1	
MIDI OUT	MIDI IN	MIDI OUT	

OR...

MIDI IN	MIDI OUT	MIDI IN	MIDI OUT	MIDI IN	MIDI THRU
Cyclone		Cyclone		Slave	
				Channel 1	

1) Connect the MIDI Out from your Master controller to the MIDI In of the
    Cyclone. The Master controller can be a MIDI keyboard, a MIDI guitar
    controller, a sequencer, a computer with sequencing software, a drum machine
    or any other source of MIDI information.

2) Connect MIDI Out from the Cyclone to MIDI In of the slave instrument you
    want to control and set the slave's Basic Channel to 1. If you want to use a synth
    as both your master and slave, make sure MIDI Local Control is OFF on the
    synth. When you turn on the Cyclone, it will automatically tell the slave to enter
    this mode.

If you have problems when you are arpeggiating the voices in your master controller
or when playing the keyboards of slave units, see the section on **Local Control** in
chapter 3.

3) If you have one or more "momentary" (spring-loaded ON/OFF) footswitches, plug them into the Cyclone's rear panel Pedal jacks according to the desired functions:

- Pedal 2 acts as a Program Chain advance, automatically selecting the next Program.
- Pedal 3 turns starts and stops arpeggiation when in Play Mode.
- Pedal 4 provides a "Tempo Tap" ability.
- The Pedal 1 jack is used as an audio out jack, providing a metronome click out under certain conditions.

4) Turn on your Master controller and set its MIDI Basic Channel to 1.

5) With the switch on the Cyclone's rear panel in its down (off) position, plug the provided power pack into an AC outlet and connect it to the power jack on the rear panel.

6) Turn the Cyclone on by flipping the switch to its up position.

- The section describing the factory presets assumes that a Hard Reset has been performed, otherwise the Cyclone may not perform as described. A "Hard Reset" *erases all of the memory, including user programs and Master settings* and initializes the Cyclone to the condition in which it is shipped from the factory. To perform a "Hard Reset" hold the switch on the front panel of the Cyclone labelled "Enable" while turning on power.

7) On the Slave(s), select sound patches with a short attack and a medium release, such as an organ, piano, or plucked guitar.

2.2 SELECTING PROGRAMS

- Press the "Mode" key so that the "Play" LED is flashing. This LED is now flashing on quarter-notes at the current tempo.

- Use the "<" and ">" keys to select a program. Programs 00 through 15 are the Factory Programs, while higher numbers are the User Programs. After selecting the program, press "Enable" to activate the program.

- Pressing the "Enable" key while in PLAY Mode causes the display to show "--" and effectively disables the Cyclone. At this point, the unit simply passes MIDI data as MIDI Thru. To re-enable the Cyclone, simply press "Enable" again.

2.3 PLAYING THE CYCLONE

The Cyclone provides many different kinds of Performance Effects, some of which may be familiar and others will be new. Some effects are generally always available, while most are dependent on which Program has been selected. There is always one and only one Program in effect.

If at any time you want to mute all the sounding voices, just press and hold the far right switch (labelled "hold to mute") and the Cyclone will automatically shut off every

sounding voice in the system. When the voices have been muted, press "Mode" to return to "Play" mode.

2.4 THE FACTORY PROGRAMS

Program 00 — Traditional Arpeggiator

1) **Classic Arpeggiation**
   This is a basic arpeggio, without any frills: Held notes are played repetitively in an eighth-note pulse rhythm in up/down note order, one at a time. This is also a good starting place to demonstrate some of the other features of the Cyclone.

   • Play and hold (using the Sustain pedal if desired) any number of notes.
   • Tap Pedal 4 in quarter-notes to set the Tempo.
   • To change the order in which the held notes are played:

   a) Press the "Mode" switch to enter "Edit Mode"
   b) Press the "Clone" switch until the LED to the left of "Order" is lit.
   c) Use the "<" and ">" keys to select other orders and press the "Enter" switch.
   d) Press the "Mode" switch to return to "Play Mode".

2) **Chord / Hold**

   • Turn off the "Clone" function by pressing the associated switch.
   • Press the "Record/Hold" switch causing the associated LED to flash.
   • Any notes you now play will be latched. Be warned that although the chord is still held in the Cyclone's memory, with some patches the sound may fade away.
   • Press the "Manual Control" switch, causing both its LED and the "Record/Hold" LED to come on steady.
   • Play notes in the lower octave of the keyboard. This will cause the Cyclone to gate and transpose the held chord accordingly.

3) **Arpeggiating, Gating and Transposing a Held Chord**

   • From Chord Hold mode, press the "Clone" switch, causing both its LED to come on and the "Record/Hold" LED to extinguish ("Manual Control" will still be lit).
   • Play notes in the lower octave of the keyboard, to simultaneously gate, arpeggiate, and transpose the held chord.
   • Also play notes above the lowest octave to simultaneously arpeggiate the keyboard *and* the "Record Buffer" — the notes held in the Cyclone's memory.

Program 01 — Octave Transpose Arpeggiation

Same as Program 00, but with automatic transposition by octaves ("untransposed/1 octave up/untransposed/1 octave down") at the end of each "scan" or pass through the held notes. Also, the order of each scan is the same as the order played, instead of just strictly up and down.

Program 02 — Two-Notes-at-a-Time Arpeggiation

Same as Program 00, but playing *two* notes at a time instead of just one, and in the order played.

Program 03 — Dual Arpeggiation

Same as Program 00, but with two keyboard "Zones" active, providing *two independent arpeggiations at once*. The two Zones split the keyboard at Middle C. Also, the order of the arpeggiation is the order in which the notes were played.

- Play one or two notes below Middle C, and a related chord above middle C. Note that the two arpeggiations can pulse "out-of-phase".

Program 04 — Auto-Doubled Arpeggiation

Same as Program 01, but with each held note automatically doubled at an octave below and a fifth above when the Clone LED is lit.

Program 05 — Manually-Doubled Arpeggiation

Same as Program 01, except the function initiated by the "Manual Control" switch allows real-time definition of doubles to be used with the arpeggiation.

- Play a chord at the high end of the keyboard and play low C on the keyboard. You will hear the chord arpeggiated. If you play another note in the bottom octave, you will hear another copy of your pattern playing at the same time that is transposed from the original.

Program 06 — Inversion Transpose Arpeggiation

Same as Program 01, but with automatic transposition by inversions (like you would invert a C chord: C/E/G,E/G/C,G/C/E,etc.) at the beginning of each scan of the held notes. Three inversions occur at each octave, after playing once without inversion.

Program 07 — Chromatic Recursion Arpeggiation

Same as Program 01, but with chromatic (half-step) transpositions at the beginning of each scan of the held notes. The original plus three chromatic transpositions are played at each octave.

Program 08 — Auto Record Arpeggiation

Same as Program 01, except the Cyclone automatically replaces the previous contents of the Record Buffer when new notes are played — and just playing back when no keys are held.

- With the "Clone" LED lit, play a chord and release it. The Cyclone will continue to arpeggiate that chord.

Program 09 — Pressure Mod Arpeggiation

Same as Program 00, but with tempo and duration controlled by keyboard pressure.

- Play and hold chords/notes, and while holding those notes, use keyboard pressure to simultaneously control the tempo and duration of the resulting notes.

Program 10 — Emersonic

Same as Program 02, but with an 8-stage automatic transposition through intervals based on a "V, VII, IV, VII, octave V, I, IV, VII" progression.

- Use keyboard pressure to vary between staccato and legato.
- Works very well with a sampled piano.

Program 11 — Random Notes

Same as Program 00, except that the order, number of held-notes-at-a-time, and pulse timing of the arpeggiation are random.

Program 12 — One-track Sequence Record/Playback

This program starts playing the contents of memory as soon as it is selected to demonstrate that just selecting the program is all it takes to start playing; you don't need to manually turn cloning on.

1) Recording up to 32 notes:

- Connect the Pedal 1 jack to one of the audio inputs on your mixer for a metronome click.
- Press the "Record/Hold" switch, causing its LED to flash at the current tempo.
- Press the "Clone" switch, causing its LED to light. If hooked up, the metronome should now be audible. Use Tempo Tap to adjust tempo as desired.
- The Cyclone will start recording when you start playing, automatically placing the first note on the first beat, and quantizing note-ons to the nearest 16th note.
- Press "Clone" to stop recording, or "Record/Hold" to stop and automatically begin playback.
- By starting recording, or resuming Recording, the Cyclone erases any previous recording, so additional takes can be started immediately.

2) Playing back a previously recorded sequence:

- With the "Record/Hold" LED turned off, press the "Clone" switch.
- Use the "Cycle" switch to control whether the Cyclone loops the recording or plays it only once.
- Duration Modulation has no effect.
- To hear the Factory Demo sequence, first select (User) Program 16 to redefine the Record Buffer (if any prior Recording/Holding has been happened since Hard Reset).

Program 13 — Recorded Rhythm Arpeggiation

Same as Program 00, except that this Program:
    1) uses a previously recorded rhythm instead of a pulse
    2) uses the recorded note-groupings to determine arpeggiated note-groupings
    3) the order is as played.

    • Use Program 12 to record a sequence with the desired rhythm pattern into the Record Buffer. Then reselect Program 13 to use that rhythm pattern.

Program 14 — Live Rhythm Playback

The inverse of Program 13, i.e. this program plays a previously recorded sequence of notes with a rhythm which is played live on the keyboard.

    • Use Program 12 to record the desired pattern of notes and chords into the Record Buffer.
    • With the "Clone" LED lit, play notes in the bottom octave in the desired rhythm pattern, and the Cyclone will step thru the recorded notes and chords accordingly.

Program 15 — Pyrotechnics!

This program demonstrates what happens when you really start to use some of the Cyclone's more interesting features. This program is actually the same as program 03, with only three parameters changed.

    • After selecting this program, press and hold the "Record/hold" button, then press the "Store" button. This erases the current recording and prepares for recording.
    • The tempo is automatically changed so it always takes the same amount of time to get through the pattern, no matter how many notes you play.
    • Play and release chords. Each time you play a new chord it replaces the previous one in memory.
    • When you get a pattern you like in memory, press the "Record/hold" button to disable recording. Whatever is in memory will continue to play.
    • Now play more chords. The keyboard is split at middle C, so you can get two more independent patterns going over what is playing from memory.
    • To change the memory pattern, press "Rec/hold" to start recording, put in a new chord, then press "Rec/hold" again to play over the memory pattern.

2.5 GLOBAL PERFORMANCE EFFECTS

Tempo Tap
When the "Clone" LED is lit, simply tap at least 3 quarter-notes on Pedal 4 at the desired tempo and the Cyclone will follow along.

Sustain
The sustain pedal function of the Master controller "holds" any played keys until it is released.

Tempo Modulation

When the "Clone" LED is lit, the pitch bend lever on your controller controls the tempo. At center position, the tempo is normal. When you bend down, it slows down.

Duration Modulation

The mod wheel/lever of the controller keyboard provides the ability to modify the relative length of time which notes sound, generally causing a more staccato feel with increasing mod wheel position. This is also called "Gate Time" on other instruments.

These factory presets are designed to give you just a flavor for what the Cyclone is capable of. They also make good starting points for your own experiments. As you can see, this is a very flexible box: There are many features which are not even hinted at by these examples. We encourage you to read on and find out exactly why we say this is the world's most powerful performance arpeggiator!

Chapter 3
Unpacking and Hookup Procedure

3.1 UNPACKING THE CYCLONE

The Cyclone is shipped from Oberheim boxed in protective foam . With it is this Owner's Manual and a power pack.

Once you have unpacked the Cyclone, place it on any solid surface near your MIDI setup. Before you turn anything on, refer to the following procedure for connecting the unit.

3.2 REAR PANEL CONNECTIONS & POWER-ON

3.2.1 MIDI

1) Connect the MIDI Out from your Master controller to the MIDI In of the Cyclone. The Master controller can be a MIDI keyboard, a MIDI Controller ("mother") keyboard, any MIDI synthesizer or sampler that has a keyboard, or any other source of MIDI notes.

2) Connect MIDI Out from the Cyclone to MIDI In of your first Slave instrument. The first Slave can be another MIDI keyboard, a keyboard synthesizer or sampler, or a MIDI voice module (rack-mount or table-top) or the Master controller keyboard itself.

If a second Slave instrument is available, connect the MIDI Thru of the first Slave to the MIDI In of the second.

3.2.2 Pedals

The back panel of the Cyclone also includes four 1/4" jacks which accept any "discrete" pedal (also known as a "footswitch"). A discrete pedal is a momentary (spring-loaded ON/OFF) footswitch type. Be sure not to use a "continuous" (rocker type) footpedal. If you plan to use any pedals with the Cyclone, simply plug them into the desired inputs.

There are two kinds of discrete pedals available. The Cyclone can use either kind by automatically deciding which kind is in use when power is turned on. To make sure that the kind of pedal is correctly determined, plug in the pedals before turning on power and **do not press the pedals while power is being turned on.**

3.3 POWERING UP

For starters....

> Turn on your Master controller and set its MIDI Basic Channel.

> Turn on the first Slave, and set its Basic Channel. If you're using a second Slave, turn it on and set its Basic Channel as well.

Then power on the Cyclone....

> Connect the provided Power Pack (Oberheim Part Number 400006 for 120V, 400007 for 220/240V) to the connector on the back of the Cyclone and plug the pack into an AC outlet. Turn the power on by lifting the power switch on the left rear panel.

> The current software revision number will be briefly displayed, the the Cyclone will enter Play Mode and will be in the same program as when it was turned off.

3.3.1 Local Control

> When the Cyclone is first powered on, it sends a MIDI Local Control Off command on the Basic Channel (the Cyclone is shipped from Oberheim set to MIDI Basic Channel 1). This allows you to use the Cyclone to arpeggiate the same keyboard you are using as a Master.
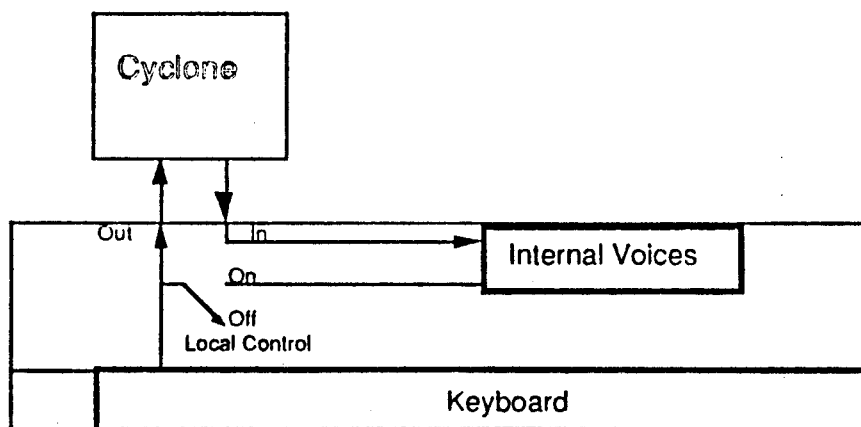
> Under normal conditions, synths operate in "Local control ON" mode. This means that what you play on the keyboard goes to the voices and is sent to MIDI Out. The voices can also be controlled from MIDI In. If you connect a synth in Local Control On mode to a Cyclone, when you play a note on the synths keyboard its will first play one of the synth's internal voices then it will be sent to the Cyclone via MIDI Out. After the Cyclone processes the note, it may send it back, causing another voice to play. Sometimes this is good, but it is usually not. By putting the Synth in Local Control Off mode, all the notes go to the Cyclone *before* they are sent to the voices.

> In cases where this is not desirable, holding the switch on the front panel of the Cyclone labelled "Manual Control" while powering on sends a MIDI Local Control On command on the Basic Channel.

Some synths, notably the DX-7, do not support the Local Control OFF function, so when those instruments are used as the master, it may be better not to try to arpeggiate the built-in voices. You will probably want to use a separate master and slave since the "doubling" problem described above only happens when the master and slave are the same unit.

Resetting the Cyclone

The Cyclone can be initialized to the condition it left the factory by performing the "Hard Reset" function. This is accomplished by holding the Enter/Enable button on the front panel while turning on power. But be careful: the Hard Reset initializes the Cyclone to the default factory settings. This erases all programmed data and replaces them with the Factory settings.

Chapter 4
General Overview

4.1 AN INTRODUCTION TO ARPEGGIATION

Typical Arpeggiator

Order (Typically Up/Down, Up-Down, Random)

| Clock | Clone | Transpose |

Current Time

Current = Start?

Order (Which notes)

Pulse Timing	Start	4	8	12	16	20	24	28...
	Duration	3	3	3	3	3	3	3...

Tempo

Record Buffer

Keyboard

Out
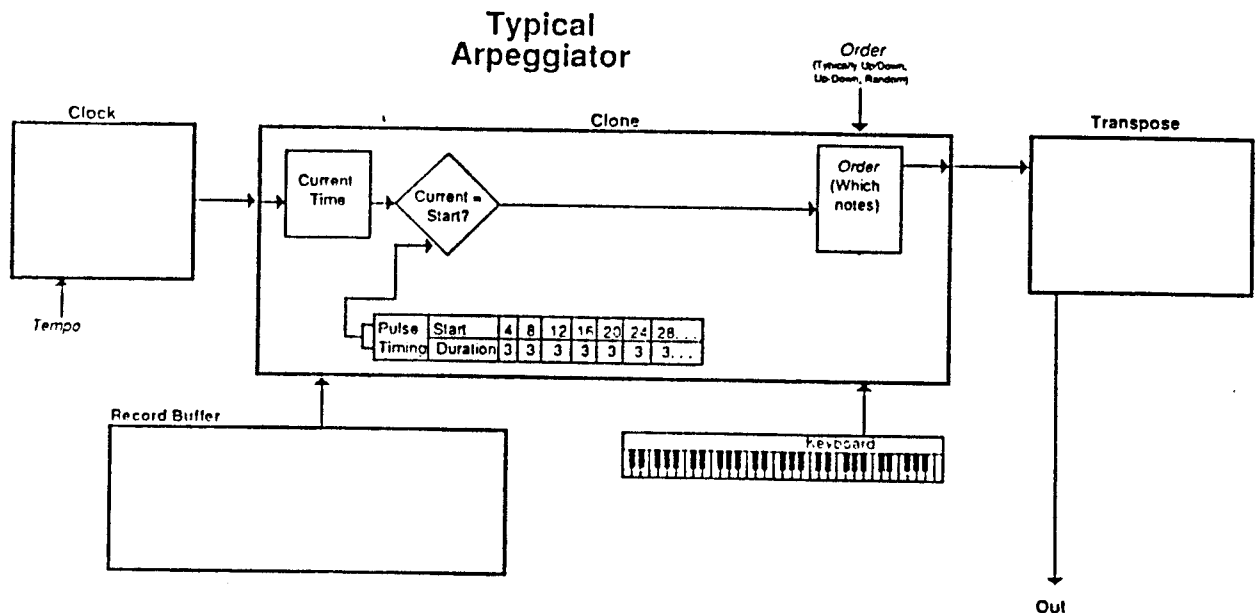
The Cyclone is a high performance, real-time, programmable, performance-oriented arpeggiator. That sounds neat, but what does it do exactly? The answer to that question occupies the remainder of this manual. In other words, there is lot going on in this box! We will try to make things easier by developing an understanding of what is going on by starting all the way from scratch.

The meaning of "arpeggio" in its most basic sense is "The playing of the tones of a chord in rapid succession rather than simultaneously." This is exactly what is performed by a typical electronic arpeggiator: You play the chord from your keyboard and the arpeggiator will play the tones one after the other as rapidly as you like and will continue to repeat the tones as long as you hold the chord. There aren't usually too many things to control. The main ones are:
- TEMPO - How fast the notes should be played
- ORDER - When playing the notes, in which order should they be played? Typical options include: Start with the lowest pitch followed by higher and higher pitches, start with the highest pitch and go down, or go up then down. Many arpeggiators can also play the tones in the order that you played the keys in the chord (or backward or forward then backward, etc.).

- TRANSPOSE - Some of the better arpeggiators will play the pattern, then transpose it by an amount you specify, then play the pattern again and transpose it and so on.
- SOURCE - While much of the time you will hold notes to be arpeggiated on the keyboard, sometimes you will want to play some pattern without actually holding the keys. Some units will let you hold a set of notes to be arpeggiated in their "memory". You then need to select the "source" for the arpeggiator: Do you want to arpeggiate what you are playing from the keyboard or what is being held in the memory?

Cloning
Beyond that, not too much is standard. The picture above shows what this basic structure looks like. There is a clock generator (a metronome of sorts) which allows you to control the rate at which the notes are played. This drives a function which we call Clone which makes copies of the notes you play and alters them by parameters such as the *mode, order,* and *rhythm.* What does the clone function do? Let's start out with what happens in a simple arpeggiator. The figure above shows the two main parts of simple cloning: Deciding when to play the next note, and deciding what pitch it should be.

The clone function keeps track of when the next note should play and for how long it should play. For example if you wanted to have new notes be generated on quarter notes, the clone function would be waiting for the clock to reach the first beat, then the second beat, then the third beat and so on, just like a sequencer would. When the clock reaches the next "Start" time ,clone creates a "gate". That is, clone says "We should start playing a note now and it should last for an eighth note."

Order
Note that the previous sentence did not say what pitch should be played, it only said that *something* should be played and that it should last for a certain length of time. The order function looks at the sources that are active (memory, the keyboard, or both) and picks which pitch to play for each gate. Which one is picked depends on whether you want play back the notes from lowest to highest, highest to lowest, random, or whatever.

Auto-Transpose
After the clone function generates new notes, they can be transposed automatically by the Auto-Transpose function. Remember, clone generates a pattern of notes based on what you play and what is in memory. Auto-Transpose changes the pattern into a new key after each time the pattern is played.

That is about all that most arpeggiators do. In the Cyclone there are a lots of other things going on as well. We'll get to most of those later in the manual. There are a few other relevant things that are important in understanding how the Cyclone works.

4.2 WHAT MAKES THE CYCLONE DIFFERENT?

Cyclone

Order
(Typically Up/Down, Up-Down, Random)

Clock
- External ÷1, 2, 4
- MIDI
- Internal

Tempo

Clone

Current Time
Recorded Timing

Current = Start?
Auto Gates

Recorded Groups

Rhythm Select
Gates

Live Gates

Mode (How many notes)
Gates

Order (Which notes)
Notes

Recorded Pitches
Live Pitches

| Pulse Timing | Start | 4 | 8 | 12 | 16 | 20 | 24 | 28... | ←Pulse Note |
| | Duration | 3 | 3 | 3 | 3 | 3 | 3 | 3... | ←Duration |

Record Buffer

Recorded Gates	Start	4	10	12	13	16	24	30..
	Duration	4	2	8	1	4	4	6..
Pitches	Pitch	A	C	D	G	E	A	G...

Control Zone   Keyboard

Transpose

Auto Transpose

Stage	1	2	3	4	5	6	7	8
Interval	C	3	F					
Repeats	1	2	1					

Manual Transpose

Transposed Notes

Double

Double	1	2	3	4	5	6	7	8
Interval	C	C1	C2	F	G2	C		
Channel	1	1	1	1	1	2		

Manual Doubles

Transposed/ Doubled Notes

Out

As the above picture indicates, there are quite a few things going on in the Cyclone which go beyond a typical arpeggiator. Don't worry — everything you see is described completely in later chapters. This is just a chance to see where we are going to end up. If you aren't comfortable with arpeggiators yet, or would just like to start playing with the box, **you can skip the rest of this chapter,** and go ahead to chapter 5. You may also want to come back to this section after you have gone through a few of the parameters to get a "big picture" of how it all fits together.

The real clock generator
Let's start at the left side of the picture. The first thing to see is that the clock generator has a couple of new options. The internal clock is still there and the Tempo control still controls how fast it is going, but you can choose one of two other sources for the clock: External clock like that generated by some drum machines, and MIDI clock for syncing the Cyclone to sequencers.

The real memory buffer
Next we move into the memory buffer. Above we said that the memory buffer memorizes what keys are held so you can arpeggiate without actually holding the keys. Well, in the Cyclone the memory buffer holds not only what notes you played, but it also the order in which you played them, when you played them, how hard you played them and how long you held them. If that sounds like what a sequencer does, you're right. And the Cyclone can do many things that a sequencer can. But look at the memory buffer again. Although there is ɩ Start Time and duration to go with every note, the rhythms are handled independantly from the pitches. This one simple fact makes the Cyclone very different from a sequencer.

The real clone function
The most obvious change is in the clone function. Although basically the same things are still happening here, there are a few extra things to see. And of course, this is where things start to get complicated. First is that the current time is still updated by the clock, but now there are two different rhythm sources. The Pulse Rhythm source provides nice evenly

spaced gates with fixed durations, while the Rhythm part of the Record Buffer uses the rhythm you have recorded, including chords and rests. In either case, clone generates gates based on these rhythms. These gates still don't have pitches, they just indicate that something should happen and for how long. Another way to indicate when something should be played and for how long is to use the keyboard. A range of notes can be set up on the keyboard from which you can play the rhythm live. The rhythm function decides which source to use for these gates: The Pulse Rhythm source, the Record Buffer, or the Live Gates.

The next step is the mode. This basically decides how many notes should be played for each gate coming from the rhythm function. In a traditional arpeggiator, mode simply says play one note for each gate coming from rhythm. That is what happens when you are playing in traditional arpeggiator mode or in sequencer mode. When you choose other combinations of rhythm and mode settings, mode can either play more than one note per incoming gate, or it can ignore some of the incoming gates if too many start at the same time. We'll get into more detail about this later in the manual when mode is discussed.

The last step in the clone function is to take the gates from mode and give them pitches. This is what the order function does. The pitches can come from either what is currently being held on the keyboard or from what is stored in memory. Order simply picks the next pitch to give to each gate.

A couple of examples

To see how these functions relate to things we are familiar with consider these two examples:

> When rhythm is set to the Pulse Rhythm generator, mode is set to exactly one note per gate and order is set to UP, the result is a very basic arpeggio where the notes play steadily, one at a time, starting with the lowest pitch and continuing up.

> When rhythm is set to Recorded Rhythm, mode is set to one note for each gate (also known as the "recorded" mode), and order is set to use the pitches from the memory buffer in the order in which they were recorded, the result sounds like a sequencer. When the clock comes to each recorded note's start time, a gate is generated. Since one note is played for each gate, the corresponding pitch from the record buffer is played for the duration of the gate. In short, for every note you recorded, one note comes out at the right time, with the same pitch and lasts for the same length of time.

Auto Transpose

The auto-transpose function now processes the notes coming from clone according to the transpose list. The main difference from a typical arpeggiator here is that you can set how many times the Cyclone should play in each key. It will then play the pattern that number of times in the given key before going to the next transposition. In addition, there are two new ways of doing auto-transpositions: Recursion and inversion. Recursion means that at the end of a pattern the key is changed by an assigned number of semitones, the pattern is played again, the key is changed by *the same number of semitones*, the pattern is played yet again, and this keeps going for some number of times....

Inversions keep the pattern going by putting the lowest note on top (or vice versa) and playing the pattern again.

Auto-Double

The last step before sending the notes out is to add extra copies of each note transposed by fixed amounts from the original. A common use of this is to double each note in the

arpeggio at one octave below the original note. Since the Cyclone can support up to eight simultaneous doubles, each note from the arpeggio could result in an eight note chord being played.

We hope that this has given you some insight into the overall layout of the Cyclone. We've just scratched the surface, but when you understand these last few pages it will be easier to grasp how all the parameters fit together and to see how to use them.

Chapter 5
General Organization

	Mode	Cycling...	Auto Mutate...	Source/ Dest...	Dump/ Load...
	Order	Timing...	Auto Double...	Control Options...	Ped 1&2...
	Rhythm	Tempo	Auto Xpose...	Rec/Hold Options...	MIDI...
	Clone	Cycle	Manual Control	Record/ Hold	Store
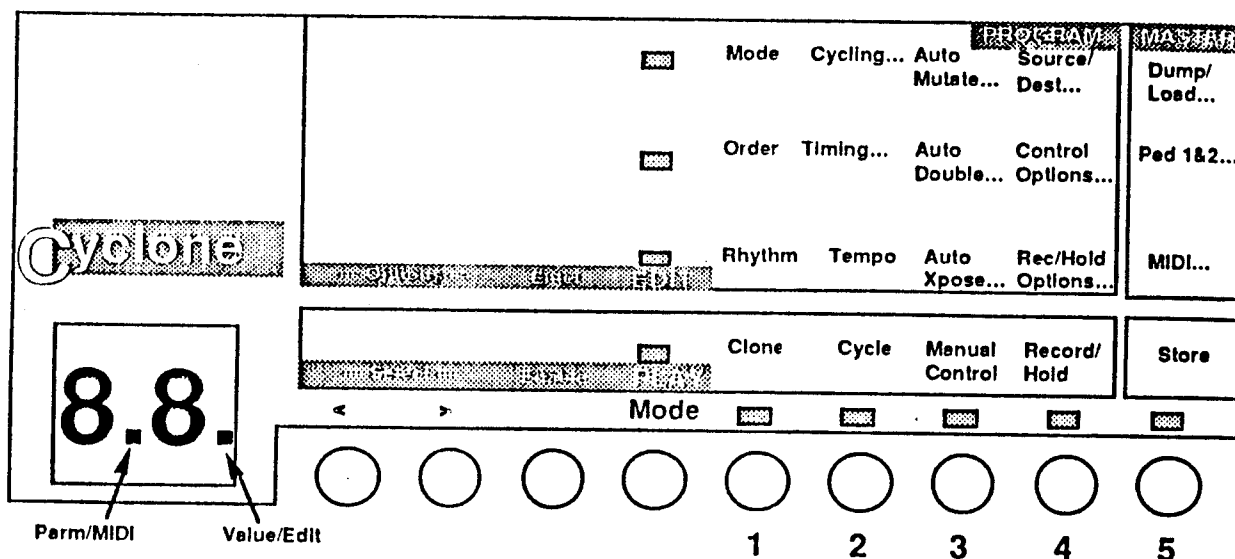
5.1 FRONT PANEL ORGANIZATION

PROGRAM Parameters vs. MASTER Parameters
The PROGRAM section includes all the parameters which can be stored and recalled together as a group. Each group of parameters is called a "Program". The MASTER section contains the parameters and functions which are shared by all programs.

PLAY Mode vs. EDIT Mode
The Cyclone has two basic modes of operation: PLAY and EDIT. The "Mode" switch selects between these two modes. The "Mode" switch also doubles as a cancel switch that aborts any action which would normally require pressing the "Enter" button to complete.

PLAY Mode:
> PLAY mode is used to select programs and to enable the basic real-time functions of the Cyclone. In this mode each button generally does only one thing and the LED above each switch shows whether that function is on or off.

EDIT Mode:
> The EDIT mode allows access to the over 60 parameters which control the operation of the Cyclone. To look at or change these parameters you must first select them via the "Parameter Matrix". Each of the labels in area above and to the right of the LED indicator lights represents one or more parameters.

5.2 MEMORY
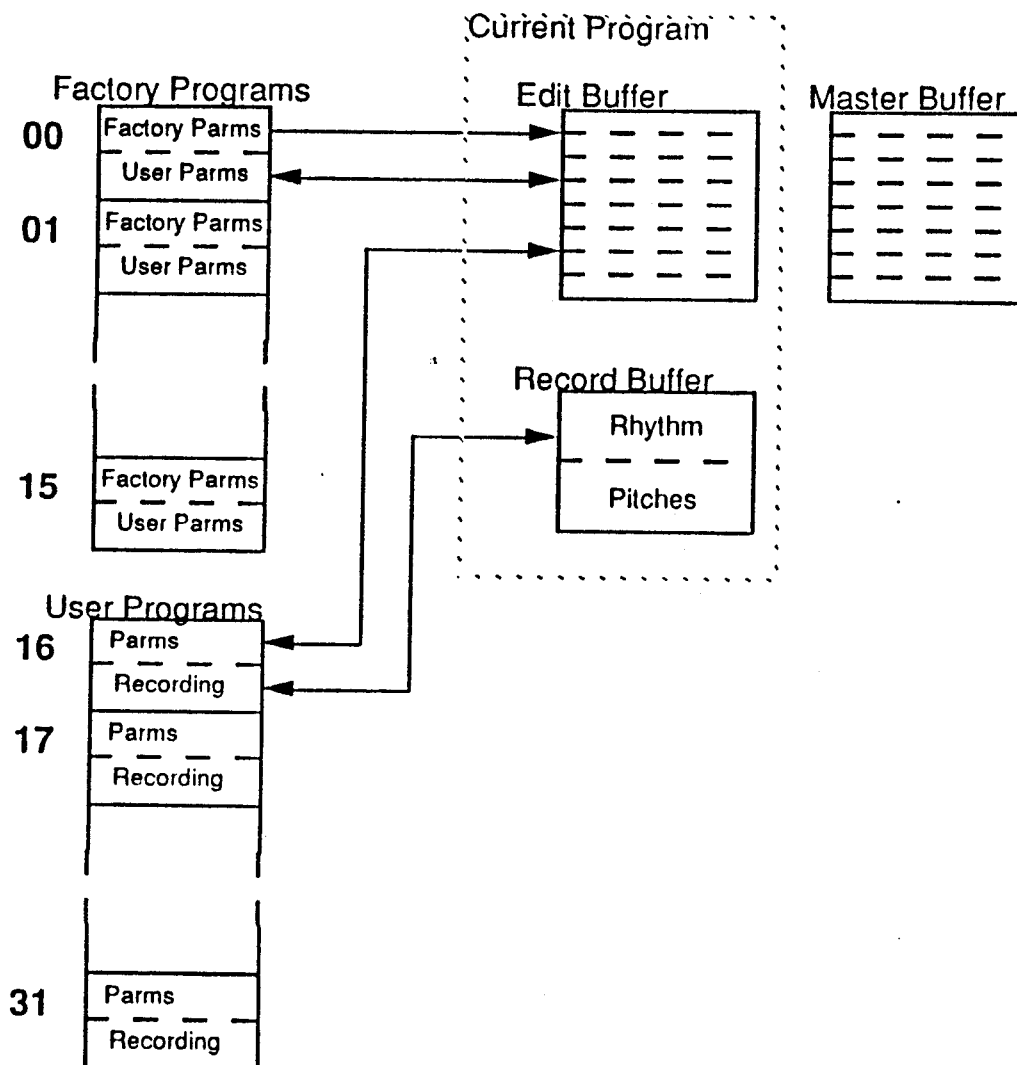
The Cyclone leaves the factory with 32 Programs: 00 through 15 are Factory Programs, while 16 through 31 are User Programs (an optional memory upgrade adds 68 more User Programs for a total of 100 Programs). The two types of Programs are described as follows:

USER Programs

User Programs are completely programmable and consist of two types of data: 1) a set of Program Parameters that determine how the music will be played and 2) an actual Recording of a musical sequence to be played. When you select a user Program #, its Program Parameters are loaded into the Edit Buffer (a section of memory reserved for Program functions) and its Recording is loaded into the Record Buffer (memory set aside for Notes and Chords).

FACTORY Programs

Factory Programs, on the other hand, are comprised of primarily permanent ROM data plus a limited subset of Program Parameters that are actually programmable by the user. In other words, there are several parameters in the Factory Programs that you can change and Store if you want. But for the most part, the Factory Programs' parameters are permanent. The following parameters an be changed in each Factory Program:

- Current state of all play mode flags: Clone On/Off, Cycle On/Off, Manual Ctl. On/Off, Record Ready/Pause/Off/Hold.
- Tempo
- Tempo Modulation Source
- Duration Modulation Source
- Destination of Record Buffer
- Destination of Keyboard Zones 1 and 2
- · Chain Program Number
- Internal Pedal 3 and 4 Definitions
- External Pedal 3 and 4 Definitions

The Current Program

The current program includes all the programmable data which is active at any one time. This includes all of the PROGRAM parameters and a recording. The Master Buffer hold the parameters that are shared by all user and factory programs, and is not affected by selecting or storing any program.

When selecting or storing to a Factory Program, only the Program Parameters are affected; the Recording data from the most recent recording session or User Program is left intact in the Record Buffer. When a Hard Reset is performed, the Cyclone copies the Factory Programs (with all Factory defaults) to the User Program locations, along with a Factory Default Recording.

Chapter 6
PLAY Mode

6.1 INTRODUCTION

PLAY mode is indicated by a flashing or steady Play LED, and is the normal mode of the Cyclone. This mode provides the ability to select, enable, and store Programs, as well as activating or deactivating the highest-level Program Functions: Cloning, Cycling, Manual Control, and Recording and Holding. In this mode, the left decimal point of the 2-digit display — labelled "Parm/MIDI" — is used to indicate reception of MIDI note-on messages on the Basic Channel of the Cyclone (and within an active keyboard Zone).

Whenever the Cyclone is Enabled, the functions which can be in effect are determined by the Program and Master Parameters. The Master Functions include the MIDI functions (Echo, Clock, etc.) and the functions assigned to Pedals 1 and 2. The Program Functions include the Zone processing (splits and re-channelization) and the functions assigned to Pedals 3 and 4 (such as Sustain) as well as those which can be executed in Play Mode by the keys labeled "Clone" , "Cycle", "Manual Control", and "Record/Hold".

6.2 SELECTOR KEYS : "— SELECT —" AND "ENABLE"

While the Cyclone is in PLAY mode, the 2-digit display reflects a Program number, or "- -" if the currently selected Program is disabled. The display also contains two decimal points that indicate a particular status while in PLAY mode:

- If the right decimal point is off, the display is reading a currently selected internal Program.

- If the right decimal point is on steady, the display indicates a currently selected external Program from a Data Card.

- If the right decimal point is flashing, a new Program has been selected but not yet activated. The previous Program # will still be active until "Enable" is pressed. When "Enable" is pressed, the flashing decimal will go out, confirming the selection, and the new Program will then be the active one.

Programs can be selected by either or two methods: press the "— Select —" "< "and ">" arrow keys to cause the display to show the desired Program #, then press the Enable switch to confirm the selection.

A new Program # can be selected over MIDI via Program Change messages transmitted from the Master controller. In this case, it is not necessary to press "Enable" as the selection is confirmed automatically.

In either case, subsequent presses of the Enable switch cause the Cyclone to toggle between the Enabled and Disabled states. When Disabled, the Cyclone is effectively taken out of the MIDI chain and simply acts as a software "Thru"; when Enabled, the Cyclone behaves according to the settings of the Program Function switches, the Program Parameters, and the Master Parameters.

6.3 PLAY MODE FUNCTIONS

Clone

The function enabled by the "Clone" switch provides most of the "active" note generation output of the Cyclone. The function may be traditional arpeggiation, sequencing, or any number of hybrid modes, plus a few completely new types of interactive performance. The term "Cloning" is used to generically refer to whichever function is programmed, as all of the available functions work on the concept of creating copies and variations of user-defined notes and patterns. There are three "Sources" of these notes: the Record Buffer and two independent keyboard Zones (Zone 1 and Zone 2). Each Source has a Destination which defines the output MIDI channel for all notes Cloned from that Source.

Cycle

The "Cycle" switch works in conjunction with "Clone" to enable a cyclic repetition of whatever Cloning function is in effect. It will usually be on, except when it is desired to execute a "one-shot" (the pattern plays once and then stops) Clone, or to cause an end to the Cloning process at the end of the next complete Cycle. As you experiment with the Cyclone, you will notice that several layers of nested looping is possible, depending on the Program. But in this case, "Cycle" as it is referred to here is the outermost repetition.

Manual Control

"Manual Control" activates a transposition or doubling capability which can be controlled from a "Control Zone" on the Master controller's keyboard. The Control Zone's attributes and the particular Manual Control function of the Cyclone are assigned by the Program parameters. This switch also works in conjunction with "Record/Hold" to enable standard Chord Hold with manual transposition and doubling of the held notes, providing a second means of active note generation.

Record/Hold

The "Record" function is the method by which notes and rhythms are input to the Record Buffer by the user. The "Hold" function is a special type of recording which provides the ability to treat the recorded notes as a Chord and simply "hold" it on without actually keeping the keys pressed. Again, the exact nature of the Record/Hold function is dependent upon the Program Parameters, and includes Step Entry, Add/Replace, Loop-In-Record, etc. If both "Record/Hold" and "Store" are pressed, the Record Buffer is erased. A detailed procedure for Recording is given in Chapter 11.

6.4 "STORE" AND "HOLD TO MUTE"

Store

The "Store" key is used to write a Program into memory. Once you have set up a Program to perform the way you want, "Store" permits you to save it into one of 16 user memories numbered 16 through 31 — remember that 00 through 15 are factory ROM memories.

Operation

1)   Press the "Store" key in the Master column once, then release it. The flashing LED above "Store" indicates that you are about to write over one of your programs.

2)   Use the "<" and ">" keys to select the destination Program location. But note that Factory Programs can only be stored to the same location or to a User Program location. Also, if any of the Factory Program "constants" have been changed, then you can only store to one of the User Programs.

3)   Press the "Enable" key. The "Store" LED will turn off, indicating that the data has been stored and the 2-digit display will indicate the destination as the new current Program.

Hold to mute

A "hold to mute" function is provided by holding the right-most switch for one second, and is available in both Modes. The Mute function generates 128 Note Offs, Sustain Off (controller # 64), and an All Notes Off message for each of the 16 MIDI channels.

Chapter 7
EDIT Mode

In the previous Chapter, we talked about the four playback functions in PLAY Mode. As you recall, PLAY Mode simply allows you to access previously stored Programs for performance.

EDIT Mode provides access to the Program Parameters and is indicated whenever any of the "row" LEDs associated with the EDIT section of the Parameter select matrix are lit. In this Mode, the same keys used to access the Program parameters in PLAY Mode ("Clone", "Cycle", "Manual Control" and "Record/Hold") are used instead as row/column selectors for the EDIT parameters.
Note that all of the PLAY and MASTER parameters are still active when in EDIT Mode, allowing the user to audition the effects of the edits in real-time.

EDIT Options: "— Select —" and "Enter"
In EDIT Mode, the same three buttons used for "— Select —" and "Enable" in PLAY are now used for "— Options —" and "Enter". Notice that the **Cyclone**'s front panel simply renames these keys in EDIT because of the way they are used in that Mode:

- The "Options" buttons select parameters within a Page, or the values of a parameter.

- The "Enter" key confirms any selection and is also used to enter/exit the value list of any parameter.

7.1 PAGES, PARAMETERS & FUNCTIONS

Each row/column intersection is referred to as a "Page". The various Parameters and Functions are organized into functional groups corresponding to these Pages. A Page that has multiple Parameters/Functions within it is indicated by an ellipsis (...) after the Page name.

Single Parameter Pages
Accessing a Page with a single Parameter (Rhythm, Order, Mode, Tempo, etc.) results in a 2-character display of the current Value of the corresponding Parameter. The other Values available for that Parameter can be viewed by using the Options ("<" and "> ") keys.

If the Parameter is an "immediate" edit, no other action is required to change its Value. If the Parameter is a "non-immediate" edit, the "Value/Edit" dot will flash, indicating that the "Enter" key must be pressed to complete the selection of that Value.

For example, to select the ORDER parameter:
- Press "Mode" to enter EDIT mode
- Press the "clone" button until the LED to the left of "Order" is lit.
- The display will now show the current value of the ORDER parameter.
- To change the ORDER, use the "<" and ">" keys to change the value.
- When the ORDER is changed, the right dot in the display will flash. Press "Enter" to activate the new value. The dot will stop flashing.

Multiple Parameter Pages

Selecting a Page with multiple Parameters/Functions (examples: "Timing...", "Cycling...", "Control Options...", etc.) results in a 2-character mnemonic display which identifies the most recently-accessed Parameter in that Page. In addition, the "Parm/MIDI" dot will light to indicate that it is just the name of the Parameter, and not its Value.

At this point, the "<" and ">" arrow keys are used to select the desired Parameter/Function within the Page, followed by a press of the "Enter" key to access the Value mode as indicated by a display of a number. You can then proceed with the edit as with a single-Parameter Page. Exiting Value mode is accomplished by hitting "Enter", any row/column selector, or Mode, or may happen automatically in the case of a Function.

For Example, to change the DURATION of each note to 18 (slightly more than 100%) for a slight legato effect do the following:
- Press "Mode" to enter EDIT mode.
- Press the "Cycle" button until the LED to the left of "Timing..." is lit.
- The display will now show the name of one of the parameters at that location: Pn (Pulse Note), dU (Duration), or Li (Link). The left display dot is lit to remind you that this is a parameter *name*, not the value of a parameter.
- Use the "<" and ">" buttons to select the DURATION (dU) parameter.
- Press the "Enter" button to see the current DURATION.
- Use the arrow buttons to set the duration to 18. In this case, the right display dot does not flash – this change takes place immediately. For some parameters, like the MIDI Basic Channel, the dot would flash and you would have to press "Enter" here to activate the change and turn off the dot.
- Press "Enter" to return to showing dU (DURATION).
- You can now select some other parameter in "Timing..." like LINK using the "<" and ">" buttons, or you can select some place else in the parameter matrix by using the rightmost five buttons.

Toggling between PLAY and EDIT modes via the "Mode" switch always accesses the most recent Page and Parameter/Function.

7.2 DISPLAY CONVENTIONS / SHORTCUTS

Values

When values greater than 99 need to be displayed in the Cyclone's two digit display, letters are used in the first digit, so 100 becomes "A0", 101 becomes "A1" and 115 becomes "B5", etc.

Notes

Parameters which are represented as MIDI keyboard notes are displayed as a pitch of the scale (C, D, E, F, G, A, and B) in the left character, and the Octave number in the right character (C3 = Middle C = MIDI Note # 60). The "C" below "C0" is displayed as C−, and the "C" below that is shown as C= (MIDI Note #0). Sharps are indicated by the Value/Edit dot.

An editing shortcut is available when working with Note # parameters. Pressing and holding Enter, then pressing a key on the controller keyboard, allows immediate definition of the desired Note #, eliminating a lot of tedious scrolling with the Option keys.

Chapter 8
Sources/Destinations

8.1 SOURCES

First in the discussion of the PROGRAM EDIT parameters is the assigning of the unit's Sources to some Destination. What we mean by this is the Cyclone — in the broadest sense — takes a musical Source, processes it, and sends it to some Destination.

The original "Source" of musical data, of course, is your Master controller. The Cyclone can process MIDI information from the Master. These are called "Zones". If you want the Cyclone to record any of the musical data from the Master controller for playback at some later time, this data can be stored in the Record Buffer for that Program.

Therefore, Cyclone can process up to <u>three</u> Sources of note data simultaneously — the contents of the Record Buffer, keyboard Zone 1, and keyboard Zone 2. Each Source may contain up to 32 notes.

8.2 DESTINATIONS

Each Source can be assigned to a Destination. In actual use, at least one Source <u>must</u> be assigned to a Destination in order for the Cyclone to do anything audible at all. Your Slave instruments are considered the "Destinations" of the Cyclone's MIDI output. The way that the unit identifies which Destination it is transmitting to is by MIDI Channel Number.

The three possible Destinations are displayed as **d.r** (the destination of the Record Buffer), **d.1** (the destination of Keyboard Zone 1) and **d.2** (the destination of Keyboard Zone 2).

These parameters assign an output MIDI Channel to be used for all events originating in that Source. Therefore, if **d.r** is given a Value of "8", this means that the Record Buffer will transmit on MIDI Channel 8. The Slave instrument you intend to play with the contents of the Record Buffer must be set to receive on MIDI Channel 8.

When **d.r**, **d.1**, or **d.2** is displayed, pressing "Enter" permits you to select from among the following options:

Display	Meaning	Description
OF	Off	The Source is de-activated. No output results from that Source.
bC	Basic Channel	The Source is active, and generates its output on the Basic Channel of the Cyclone as defined in the MIDI Page, parameter bC (see chapter 15).
1···16	Fixed Channel	The Source is active and generates its output on the indicated MIDI Channel.

8.3 ZONE LIMITS

Also included in this Page are the Zone Limit parameters for Zones 1 and 2. The Zone Limits simply specify the Low Note and High Note limits for each Zone (**L.1, H.1, L.2, H.2**). It is easiest to edit these parameters using the shortcut described in section 7.2 "Display Conventions/Shortcuts".

Note that within a Zone, the Hi note must be above the low note, and that Zones 1 and 2 are completely independent allowing them to be placed anywhere on the keyboard. This allows both layering of your Slave instruments (when the Zones overlap) and splits (when the Zones do not overlap, creating a lower keyboard playing one Slave and an upper keyboard that plays another Slave).

Chapter 9
Cloning: Rhythm, Order, Mode

9.1 WHATS IN A CLONE

After you have determined what Source or Sources you will use, you are ready for the next step: customizing the playback of the music. The performance of any musical instrument can be broken down into a number of activities and examined individually, if needed: what notes are played, in what order they were played, how fast or slow they are played, the rhythm or time signature and so forth. The power behind the Cyclone is the ability to take previously recorded material stored in the Record Buffer, or notes/chords played in real time ("live") from Zones 1 and 2, and arrange their playback characteristics in a surprisingly wide variety of ways.

When "Clone" is selected on in PLAY Mode, the settings in the "Rhythm", "Order" and "Mode" pages are what primarily determine the playback characteristics of the Sources' notes/chords. In other words, if the Record Buffer is the active Source, the data stored in it will be played back according to how you have set the parameters in the "Rhythm", "Order" and "Mode" pages (plus the "Tempo", "Timing..." and "Cycling..." pages. These are next in line in your customizing of the Cyclone's playback and are discussed in the next three sub-sections of this Chapter following this one.)

For the purposes of the Cyclone, a "Clone" is basically an exact copy, or a variation of, an original Source list of pitches. This "list of pitches" is the contents of the Record Buffer, or the real-time input from keyboard Zones 1 and 2. But it is important to keep in mind that in order to actually generate note outputs from the Cyclone, the following criteria must be met:

1)   At least one Source must be active. This is accomplished by assigning the Source to an output Destination (other than Off) in the Source/Destination Page. Likewise, there must be something on the receiving end which can make sound if it is to be heard.

2)   The selected Source(s) must contain some notes to be Cloned. For the Record Buffer, this means entering Record or Hold mode and playing some notes on the keyboard, as described in "Record/Hold". For keyboard Zones 1 and 2, it simply means holding down some notes as with a traditional arpeggiator, making sure to observe the Zone Hi/Lo note Limits.

3)   Rhythm triggers must be generated to signal the Cyclone that it is time to play some notes! Where this trigger comes from is defined by the Rhythm parameter.

9.2 RHYTHM

Unlike the pitch Sources, there is only one active Rhythm at any one time in the **Cyclone**, but there are three to choose from:

rC   Recorded   The rhythm triggers are based on a previously input (either in real or step-time) pattern of polyphonic timing data in the record buffer. If there is no data, there will be no triggers! Up to 32 timing events can be recorded per Program, as outlined in "Record/Hold".

P U   Pulse   The rhythm triggers are based on an internally-generated pulse clock, with the pulse note value, duration, and other characteristics defined by parameters in the Timing Page.

L S
L P   Live   The rhythm triggers are input live from the keyboard, using the Control Zone.

LS refers to Live Single Triggers, which means a trigger is only generated on the first of multiple simultaneously held notes played in the Control Zone.

LP refers to Live Poly Trigger, in which a trigger is generated for every note played in the Control Zone, with overlapping allowed.

Once a rhythm trigger has been generated, the remaining questions to be answered before notes can be generated are 1) how many? and 2) which ones? The Mode parameter provides the answer to the first, while the Order parameter takes care of the second.

9.3 MODE

The Mode parameter specifies how many notes from the Source to play at a given trigger, and allows several classes:

Display	Meaning	Description
rC	As Recorded	The number of Source notes played is based on the recorded note groupings.
F1···F8	Fixed	The number of Source notes played is fixed between 1 and 8 notes.
AL P2···P8	Proportional	The number of Source notes to play at this trigger is proportional to the total number of Source notes with a divisor of 1 through 8. AL is division by 1.

r2···r8	Random	The number of Source notes is a random number between 1 and the specified number.

9.4 ORDER

As previously indicated, the "Order" parameter defines the criteria by which the particular Source notes to generate are determined. The actual Values represent the valid combinations of the order criteria (chronological, note#, or random), the initial direction, and whether to alternate directions with each scan of the Source note list, as described in the following table.

Chronologically — the Cyclone will process notes/chords in the exact order it receives them from the Master. It will then transmit them as follows:

rF	Received Forward	chronologically, forward only
rb	Received Backward	chronologically, backward only
Fb	Forward-Backward	chronologically, initially forward, alternating
bF	Backward-Forward	chronologically, initially backward, alternating

By Note # — the Cyclone will process notes/chords by Note Number. The chronological order it receives them from the Master is ignored. It will then transmit them as follows:

UP	Up	by note #, ascending only
dn	Down	by note # , descending only
Ud	Up-Down	by note #, initially ascending, alternating
dU	Down-Up	by note #, initially descending, alternating

Random — the Cyclone will process notes/chords randomly. The note number or chronological order it receives them from the Master are ignored. It will then transmit them as follows:

rn	Random	Random order, repeats of the same note allowed

9.5 CLONING: THE GENERAL CASE

With a little thought, it is possible to understand how these Cloning parameters, in conjunction with the Source/Destination parameters, can be defined to implement the traditional performance techniques. Classical arpeggiation is really just the combination of a keyboard Zone, a Pulse Rhythm, Fixed 1 Mode, and Up-Down Order, while sequencing would result from activating the Record Buffer, using Recorded Rhythm, As Recorded Mode, and Received Forward Order. However, all combinations of these parameters are valid, leading to a large number of completely new performance techniques, which together are called "Cloning".

Chapter 10
Tempo, Timing and Cycling

10.1 TEMPO

The "Tempo" parameter controls the rate of the Cloning output if being driven by the Cyclone's internal hardware clock. It is displayed as one-half the actual beats per minute due to the wide range of available tempos and the limits of the 2-digit display.

The Tempo range is displayed in "Beats Per Minute" from 10 bpm to 398 bpm (each beat represents a quarter-note). This translates to a display range of 5 bpm to 199 bpm when cut in half. (Note that the display will revert to the "deciheximal" convention at an actual Tempo of 200 bpm). If either External Sync or MIDI Sync has been selected in the corresponding Master Parameters, the Tempo parameter display shows "EC" as a reminder, and editing of the Tempo is not allowed.

When in Play Mode, the Play LED will flash at the actual Tempo as an indicator that the Sync source is providing the appropriate timing reference. This applies to the internal hardware clock as well.

Tempo Tap

The Cyclone provides the ability to "tap" a Pedal in order to define or alter the Tempo. The procedure for defining a Pedal to do this is described in the "Pedals" section. (Note: the Cyclone ships from the factory with Pedal 4 already set for Tempo Tap). This section describes how to actually use that Pedal for Tempo Tap in real-time. Assuming that such a Pedal has been assigned, all that is required is to understand how the Cyclone interprets the taps received from the Tempo Tap Pedal.

Each tap is considered to represent a quarter note. The Cyclone uses an average of the two intervals defined by the last three taps to calculate what the intended Tempo should be. The full range of the Tempo parameter is available from the the Tempo Tap Pedal, so a little arithmetic shows that the slowest tap that can be interpreted is 6 seconds. Once beyond the 6-second limit, the Tempo Tap "times out" and resets, throwing out the previous tap times and starts waiting to get three new beats to update the Tempo. If a tap is missed, it is possible to force an early reset by pressing and holding the Enter button and then tapping once. This can be useful since 6 seconds is often a long time to wait in a piece of music.

As the resolution of the tapped Tempo is much more than can be displayed, the Tempo is shown with the Value/Edit dot lit if the Tempo has been defined by tapping. The full resolution is also stored and recalled with the Program.

10.2 TIMING...

The Timing page groups the parameters which define the characteristics of the Pulse Clock used for Pulse Rhythm. These parameters have no effect in any other Rhythm!

P.n — Pulse Note
The Pulse Note (P.n) defines the time between Pulses. The numeric Values represent the corresponding tempo-independent beat value as follows:

4	quarter-note
8	eighth-note
1 2	eighth-note triplet
1 6	16th-note
2 4	16th-note triplet
3 2	32nd-note
4 8	32nd-note triplet
9 6	64th-note triplet
t U	Tuplet mode

A Pulse Note Value of tU indicates Tuplet mode. In Tuplet mode, the time between beats is calculated dynamically by dividing the length of the Record Buffer in beats by the number of notes in the Source. The Record Buffer length is available for editing in the Rec/Hold Options Page as the End Beat (Eb) parameter. Thus in Tuplet mode, the time of each iteration thru the Source note list is a constant equal to the End Beat. Setting the End Beat to 1 allows division of the basic quarter-note according to how many notes are held on the keyboard. Note also, each Source is actually able to Pulse at different times, allowing poly-rhythms between the Sources.

d.U — Duration
The Duration (d.U) parameter defines what percentage of the time each Pulse Note stays gated, where 16 is 100%. The range is from 1 to 31 allowing approximately a 6% to 194% variation.

The ability to provide a legato pulse, with Duration Values greater than 16, provides a whole new feel even to classic arpeggiation, and works especially well with sampled pianos. On the other hand, a duration of less than 16 creates a more mechanical, staccato effect.

L.i — Link
The Link (**L.i**) parameter controls whether the Sources share the same Pulse Clock (when not in Tuplet mode).

Display	Meaning	Description
OF	Off	the Sources pulse independently.
On	On	the Sources are "linked" together, causing them to pulse in phase.

The effect of this parameter is not audible unless multiple Sources are active, and the Sync-to-Trigger (SY) parameter (located in the Cycling Page) is not set to Off (OF) or Cycle (CY). Out-of-phase pulses are possible if Link is Off and Sync-to-Trigger is set to Clock (CL) or Order (Or).

10.3 CYCLING...

The Cycling Page contains those parameters which govern the behavior of the Cyclone in relation to the various levels of cyclic repetition which can occur during Cloning. There are 5 nested layers of Cycling possible in the Cyclone as follows:

1) The innermost layer of Cycling (and the shortest) is called the Scan, and is comprised of the stream of notes which results from one pass thru a list of Source notes in a single direction in the selected Order.

2) The next layer of Cycling is called the Basic Cycle, and is comprised of either one Scan (as in the case of "Up" order) or two Scans (as in "Up and Down" order).

4) The next layer is the Auto-Transpose Repeat.

3) The next layer is the Auto-Transpose Stage.

5) The outermost layer (and the longest) is simply called a Cycle. In Play Mode, a single Cycle is generated by pressing Clone with Cycle off, while infinite multiple Cycles are enabled if Cycle is on.

The Auto-Transpose Repeat and Stage cycles are controlled by parameters in the Auto-Xpose Page, and covered in more detail in "Auto-Transpose".

E.b — End Beat
The End Beat (**E.b**) parameter serves two purposes. In Recorded Rhythm, it defines the length of the recorded timing pattern in quarter-note beats. In Tuplet mode of Pulse Rhythm (see "Timing (Pulsing)"), the End Beat is used to define the length of time to be sub-divided by the number of Source notes. The End Beat can always be changed without losing any of the rhythm event data in the Record Buffer. The range of the End Beat is from 1 to 64 quarter-note beats.

S.Y — Sync-to-Trigger

The Sync-to-Trigger (SY) parameter allows the ability to synchronize various functional behaviors of the Cyclone to the gating of notes on the keyboard. (This parameter has no effect in Live Trigger Rhythms). For all Values, the "Trigger" being referred to is a transition from no notes being held/gated to any notes being held/gated within the Zone(s). In Pulse Rhythm, if Link (Li) is On, then this definition applies to both Zone 1 and Zone 2 together; otherwise, each Zone can generate its own independent Trigger. The processing which happens when this Trigger is received is determined by the Value of Sync-to-Trigger as follows:

Display	Meaning	Description
OF	Off	No action results.
CL	Clock	In Recorded Rhythm, the Cyclone re-starts the timing pattern from the beginning, e.g. Beat 1. In Pulse Rhythm, the Cyclone advances the internal Pulse Clock to coincide with the Trigger, so that a Pulse occurs immediately, and notes are generated.
or	Order	In addition to the processing described above for Clock, all Sources are forced to begin the next Scan.
CY	Cycle	All Sources are forced to restart from the beginning (including all Auto Transpose cycles).

r.S — Mode Reset

The Mode Reset (r.S) parameter determines what to do in the case where the number of Source notes to play (as determined by the setting of the Mode parameter) is not zero when the end of a Scan is reached.

Display	Meaning	Description
On	On	the internal counter which keeps track of the number of notes remaining to play is set to 0, and the next rhythm trigger will start at the beginning of the Source note list.
OF	Off	the Cyclone will loop to the beginning of the Source note list (during the same rhythm trigger) and continue to generate notes until the number of notes defined by the Mode is satisfied.

i.A — Invert Alternate

The Invert Alternate (i.A) parameter changes the way alternating Orders are processed by the Cyclone when Auto-Transposing.

Display	Meaning	Description

OF	Off	At the end of a Scan, the direction is switched, forming the Basic Cycle on which the Auto-Transpose Stages operate.
On	On	A single Scan in the initial direction forms the Basic Cycle for each Repetition and each Stage; then the Scan direction is inverted to form a new Basic Cycle for the Repetitions, and the Stages are also processed in the opposite direction.

Chapter 11
Record / Hold

"Recording" is the process of getting data into the memory of the **Cyclone**. The **Cyclone** allows recording of both note and rhythm information, and when this information is received by the **Cyclone**, it is put into the Record Buffer.

The rhythm data defines the timing pattern used whenever the "Recorded Rhythm" parameter (displayed as **rC**) is selected for Cloning. The note data is used whenever the Record Buffer is activated according to the Destination parameter (**dr**) in the Source/Destination Page.

Record/Hold Options

r.H — Record/Hold Mode
The Record/Hold Mode (**r.II**) parameter controls the add/replace logic during Recording:

Display	Meaning	Description
rE	Replace	This Mode causes either the note data or both the rhythm and note data in the Record Buffer to be completely replaced by the new data received during the Record-in-Progress state of the Recording process. If Recording only notes, only notes are replaced. If Recording rhythm data, then both rhythm and note data are replaced. The old data is not actually replaced until Recording starts. If Recording rhythm data, the End Beat will have a new Value when Recording stops as well.
rG	Replace Gated	Playing legato, or holding any notes, causes the entire phrase to be recorded just as in Replace Mode. When the last note has been released, Recording stops and the Cyclone returns automatically to Record Ready, waiting to begin again at the next note.
Ad	Add	This Mode preserves the previous contents of the Record Buffer when Recording, as well as the Value of the End Beat. If recording rhythm events, new timing data is merged in with the old according to note-on times. If recording rhythm data in real-time and Cycle is on, then Loop-in-Record mode takes effect, allowing multiple cycles of recording (see "Record-in-Progress"). The Value of the End Beat is preserved as well.

A.C — Auto-correct Step Size

The Auto-correct Step Size (A.C) parameter serves two functions when Recording rhythm events:

1) In Recorded Rhythm, it defines the auto-correct resolution (also referred to as quantization) to be applied to the note-on times when Recording.

2) In Live Trigger Rhythms, it defines the Step Size of the current Recording Step Time with each press of a key in the Control Zone. Like the Pulse Note parameter, it is specified as a beat-value:

4	quarter-note
8	eighth-note
12	eighth-note triplet
16	16th-note
24	16th-note triplet
32	32nd-note
48	32nd-note triplet
OF	64th-note triplet

The **OF** Value indicates that no auto-correction is taking place This means that note-ons are being Recorded at the full internal resolution of the Cyclone (24 pulses per quarter-note, same as MIDI Clock). When used as a Step Size, it indicates a 64th-note triplet as indicated (not a zero Step Size!).

NOTE: Since auto-correction is a process of determining the closest of two pulses to use for an event time, and since a 32nd-note and a 64th-note triplet consist of 3 and 1 pulse each, and hence not divisible by 2, it should be noted that auto-correction by these values will result in "skewed" timings. If utmost accuracy is important, these settings should be avoided by increasing the Tempo and using a larger Step Size. This does not apply to its use in Step Recording.

As can be seen from the above, many different styles of Recording are available in the Cyclone. Exactly which style is available or active depends primarily on the Values of the Rhythm and Record/Hold Program Parameters and the order of activating the various Program Functions in Play Mode. The whole Recording process has four distinct stages — Record Ready, Record Start, Record-in-Progress, and Record Stop — quite similar to a tape recorder or sequencer. At each point in the process, several options may be present, as described below.

1) Record Ready
Recording is *enabled* simply by pressing the Record/Hold switch in Play Mode (with Manual Control deactivated), thus entering the "Record Ready" state. In this state:

• The Record/Hold LED flashes at the current Tempo.

• If Cloning was enabled prior to entering Record Ready, then the output continues normally. It may be stopped at any point by pressing "Clone". Turning on Manual Control will abort the recording.

- If not already Cloning, then pressing the Clone switch enters the "Clone Pause" mode, in which the Clone LED is on, but no actual output is generated, awaiting the start of Record. If the "Recorded Rhythm and Click" (CL) parameter has been programmed for Pedal 1 (see "Pedals 1 & 2"), a metronomic click audio output will be available at the Pedal 1 jack during Clone Pause mode. Manual Control is automatically disabled in Clone Pause mode.

- "Cycle" may be turned on and off at will.

- Turning Manual Control on with Clone off will abort Recording and go directly to the Chord Hold mode described in "Control Zone Parameters".
- If not Cloning or paused in Recorded Rhythm, pressing Record/Hold again will also abort Recording. ⅃

- Pressing the "Store" switch erases all notes in the Record Buffer, and all rhythm events if in the Cyclone is in "Clone Pause" and Recorded Rhythm. The Store LED will pulse once to indicate the erasure. This will also set the End Beat to 1 if in Tuplet Mode.

2) Record Start

Initiating a Recording can be achieved by any one of three methods. Recording actually *starts* under any of the following circumstances:

- If the **Cyclone** is in Record Ready, the first note is depressed on the keyboard starts the Recording.

- If the **Cyclone** is in 1) Record Ready, 2) Cloning or in Clone Pause mode and 3) in Recorded Rhythm, pressing Record/Hold again starts the Recording.

  This allows the first rhythm event to occur <u>after</u> Beat 1.

- If the **Cyclone** is *not* in Record Ready, but if 1) Zone 1's actual Destination channel is the same as that of the Record Buffer (and neither is Off) and 2) notes are being held in Zone 1, pressing Record/Hold starts the Recording.

  This allows for a "quick start" mode.

In any case, the following actions occur immediately:

- If the Destination of the Record Buffer (**dr**) is Off, then it is automatically activated on the Basic Channel.

- If the Record/Hold Mode (**rH**) parameter is either Replace (**rE**) or Replace Gated (**rG**), then the previous contents of the Record Buffer are erased, and the End Beat (**Eb**) is set to the maximum Value of 64.

- Zones 1 and 2 are deactivated for the duration of the Recording session. If Zone 1 is on the same Destination channel as the Record Buffer, any notes in Zone 1 are recorded. Any other notes held in the Zones or currently being Cloned will be muted.

- If previously in Clone Pause mode, then Cloning is actually activated. If previously actually Cloning, then it is stopped and re-started.

- If Cloning in Pulse Rhythm, Cycling is automatically enabled (if not already).

- The Record/Hold LED comes on steady to indicate transition to the Record-in-Progress state.
- Manual Control is automatically disabled.

3) Record-in-Progress

The behavior of the **Cyclone** during the Record-in-Progress state depends on a combination of factors:

- If Cloning is *not* enabled, then "Holding" occurs. Holding is a special type of recording in which only notes are recorded into the Record Buffer, and in which note-offs are not echoed over MIDI, causing the recorded notes to sustain indefinitely. This is similar to the function of a normal Hold or Sustain pedal, except that the notes are committed to memory.

- If Cloning *is* enabled, then the Rhythm determines the basic behavior of the Cyclone:

RECORDED RHYTHM	The Cyclone generally behaves like a traditional sequencer, passively recording the new note and rhythm data *and* echoing the notes in real-time.
PULSE RHYTHM	The Cyclone records the notes only (and retaining the prvious rhythm information), *without* echoing the performance itself, yet actively Cloning the new notes.
LIVE TRIGGER RHYTHMS	The Cyclone records in "Step Mode", with the "Step Time" advanced by pressing any key in the Control Zone and the "Step Size" equal to the Value of the Auto-correct Step Size (AC) parameter. The new note and rhythm data is recorded and echoed.

- Rhythm events are recorded *only* if Cloning in the Recorded or Live Trigger Rhythms while Recording. A rhythm event contains the note-on and note-off times associated with a singe key press. The resolution of the timing data is the same as MIDI timing clocks, 24 pulses-per-quarter-note. The note-on times only are quantized according to the Auto-correct (AC) setting when recorded; the actual note-on time is not recorded. A Recording may be up to 64 beats long and contain up to 32 events. Any events past this maximum are not recorded.

- Note data is always recorded except when notes are played in an inaudible Control Zone (see chpter 12), in which case it is recorded as a Rest if not recording rhythm events and ignored otherwise. Note data includes both the MIDI note # and the note-on velocity. A Rest is a special kind of note which is treated as a normal Source note in all respects, except that it is muted when Cloned. This allows breaking up of Rhythms in predictable ways. Up to 32 notes can be recorded, and any notes past this maximum are neither recorded nor echoed.

- If 1) recording rhythm events in real-time (e.g. Recorded Rhythm); 2) the Record/Hold Mode (rH) is Add (Ad); and 3) Cycle is on, then a special "Loop-in-Record" mode is active.

In this mode, the **Cyclone** stays in Record indefinitely, allowing repeated cyclic overdubs to previously recorded note and rhythm data similar to most drum machines. Notes being held when the End Beat time occurs are muted and recorded with a note-off time equal to the End Beat.

4) Record Stop
The end of the Record-in-Progress state is caused by any of the following events:

- Pressing any Front Panel switch.

- The use of any Pedal function other than Sustain, Sostenuto, Tempo Tap, Click Out, or External Sync (see "Pedals 1 & 2" and "Pedals 3 & 4").

- The End Beat is set to the length of the recording when recording rhythm events (and not in Loop-in-Record).

- Release of the last note on the keyboard when in Replace Gated Record/Hold Mode.

- Receipt of a MIDI Program Change on the Basic Channel (see Chapter 15).

- Receipt of a MIDI Start or Stop Command, if MIDI Clock is set to Receive (see Chapter 15).

The action which is normally associated with the event causing Record to Stop also occurs and has the same result as if the Record/Hold LED were off, except:

- The Record/Hold switch simply stops Recording. All other functions continue in effect.

- The Manual Control switch causes a change to the Chord Hold mode if not Cloning.

- Release of the last note on the keyboard in Replace Gated Record/Hold Mode causes the Cyclone to return to the Record Ready state, waiting for a new keyboard note to re-start Recording.

- For all events, if recording rhythm events in Replace or Replace Gated Record/Hold Mode, then the End Beat is set equal to the closest whole beat to the current Recording time.

Chapter 12
Control Options...

In addition to the two keyboard Zones ("1" and "2"), the Cyclone provides another Zone, called the Control Zone. This Zone is not a source Zone, although it exists on the Master controller as a section of its keyboard. What the Control Zone does is provide a user-definable section of the Master keyboard that is used to perform a number of control functions rather than musical data.

The "Control Options..." page comprises what we call the Control Zone which is used for three independent functions:

- Input of Live Triggers and Step Advance for LS and LP Rhythms.
- Manual doubling and transposition while Cloning or Holding.
- Definition of Rests

These three functions can all be available simultaneously, if so programmed and enabled.

Input of Live Triggers is enabled automatically whenever Cloning in Live Single Trigger or Live Poly Trigger Rhythms, and disabled at all other times. The Live Trigger note-on velocity is used for all notes Cloned for that Live Trigger. Step Advance is automatically enabled whenever Recording in Live Trigger Rhythms. Step Advances are never echoed, regardless.

Manual doubling and transposition is enabled in PLAY Mode through the Manual Control switch. The particular function is defined by the Manual Control parameter parameter (see below). If Cloning is enabled, then the transposition and doubling controls operate on the Cloned note stream (at note-on time only). If Holding, then the Manual Control function operates on the Record Buffer note list like a traditional Chord Hold, and the note-on velocity of the Control notes is used for the transposed/doubled notes. (Note: Clone and Hold may be activated either before or after Manual Control — it makes no difference).

Rests can be inserted into a Source note list instead of a note number by setting up an inaudible Control Zone which overlaps the input keyboard Zone, and then playing or holding notes in the overlap region.

The available Control Zone functions, along with their corresponding display mnemonics, are listed below:

C.t	Manual Control
L.n	Low Note
H.n	High Note
b.n	Base Note
A.U	Audible Control
P.r	Manual Transpose Priority
C.P	Chain Program
P.3	Local Pedal 3
P.4	Local Pedal 4
E.3	MIDI Pedal 3
E.4	MIDI Pedal 4

C.t — Manual Control

The Manual Control (C.t) parameter determines which of four functions is enabled by the Manual Control switch:

Display	Meaning	Description
tG	Transpose Gated	The Holding or Cloning notes are transposed by the interval defined by the number of steps between the transposing note within the Control Zone and the Base Note (defined below). If more than one note is held in the Control Zone, the Transpose Priority parameter is used to determine which note to use as the transposing note. If no notes are held, there is no output at all from the Cloning/Holding function thus "gating" the playback.
tC	Transpose Continuous	Same as Transpose Gated, except that the Cloning/Holding function continues as it would normally evenwhen notes in the Control Zone are released.
dG	Double Gated	The Holding or Cloning notes are doubled by each note held in the Control Zone (up to 8), at intervals defined by the number of steps between the doubling note within the Control Zone and the Base Note, on the same MIDI Channel as the Held/Cloning notes. If no notes are held, there is no output at all form the Cloning/Holding function thus "gating" the playback.
dC	Double Continuous	Same as Double Gated, except that the Cloning/Holding function continues as it would normally even when notes in the Control Zone are released. Legato playing of the control notes results in an additional double for each such note, up to the 8-double limit, while staccato playing replaces any previous doubles.

L.n and H.n — Zone Limits

The Control Zone can be placed anywhere on the keyboard, and may overlap with Zones 1 and 2. The Lo Note (Ln) and Hi Note (Hn) parameters define the endpoints of the Control Zone, and are best defined using the Note# shortcut edit described in "Edit Mode". The Lo and Hi Notes cannot "cross". Notes played in the Control Zone will cause the MIDI dot to flash in Play Mode.

b.n — Base Note

The Base Note (b.n) parameter allows a note to be defined (anywhere on the keyboard) which is used for computing the transposition and doubling intervals for the Manual

Control Function. That note will be considered to mean "no Transpose." For example, when C0 is used as the Base Note (as in the factory programs), using F0 for a manual transpose would result in a transposition of a fouth. It is best defined using the Note# shortcut edit defined in "Edit Mode". The note does not have to be in the Control Zone.

A.U — Audible Control

The Audible Control (A.U) parameter determines whether notes played within the Control Zone are <u>heard</u> as well as providing control data from the Master to the Cyclone.

OF	Off	A note played in the Control Zone will not be echoed out MIDI. If the note is also in Zone 1 or 2, it is treated as a Rest.
On	On	A note played in the Control Zone will be echoed out on the Basic Channel if 1) not also in Zone 1 or 2, and 2) MIDI Echo is On. If it *is* also in Zone 1 or 2, then 1) it is treated as normal input to that Zone; 2) any Control function in effect is invoked as if there were no overlap; and 3) no echo on the Basic Channel is performed.

P.r — Transpose Priority

The Transpose Priority (P.r) parameter provides the four standard keyboard priority schemes for choosing between multiple notes in the Control Zone when manually transposing. In the following table, the transpose interval is determined by:

Display	Meaning	Description
LO	Lowest Note	The lowest note in the Control Zone.
Hi	Highest Note	The highest note in the Control Zone.
OL	Oldest Note	The oldest note being held in the Control Zone.
nE	Newest Note	The latest note played in the Control Zone.

P.3	Local Pedal 3
P.4	Local Pedal 4
E.3	MIDI Pedal 3
E.4	MIDI Pedal 4

These parameters are used to set up pedals 3 and 4. For a complete description of pedal setup and usage, see chapter 14.

Chapter 13
Auto-Effects

13.1 AUTO XPOSE...

The **Cyclone** provides the ability to automatically transpose notes during Cloning, in a two-level cyclic repetition. The outermost transpose layer is referred to as a "Stage" while the lower transpose layer is referred to simply as a "Repeat" of that Stage. There are 8 Stages provided, with up to 128 Repeats per Stage. A Repeat normally consists of one Basic Cycle, as described in "Cycling".

Three independent Auto-Transpose functions are available. At the Stage level, the **Cyclone** allows specification of a fixed transpose interval which will be in effect for the duration of that Stage.

Two Auto-Transpose functions are available at the Repeat level. "Transpose by Inversions" provides the ability to invert the notes within a Source note list in generally the same sense as one inverts a standard triad. Inversion processing begins with the original Source note list at the first Repeat of each Stage, then at the beginning of each successive Repeat inverts the note list used by the prior Repeat. Inversions may proceed either up or down, and do not alternate direction automatically. (A note added to a Source after the beginning of the second Repeat of a Stage is inserted into the note list according to its actual note value, not the value it would have had if it had been present at the first Repeat of a Stage and inverted along with the rest of the notes in the Source).

"Transpose by Recursions", also at the Repeat level, provides the ability to add the same constant interval to the Source notes at each Repeat. This allows such effects as chromatic variations, circle of fifths, diminished progressions, octaves, etc.

All transpose functions in the **Cyclone** are additive.

A.t — Auto-Transpose Mode
The Auto-Transpose Mode (**A.t**) parameter controls the enabling and style of Auto-Transpose.

Display	Meaning	Description
OF	Off	Auto-Transpose is defeated, and a Cycle simply consists of a Basic Cycle. None of the other Auto-Transpose parameters have any effect if this is the selected Mode.
On	Normal	Auto-Transpose is enabled, allowing the Stages to progress as programmed.
i U	Inversions Up	Auto-Transpose is enabled, with each Repeat inverting the note list used in the prior Repeat in the Up direction.

id	Inversions Down	Auto-Transpose is enabled, with each Repeat inverting the note list used in the prior Repeat in the Down direction.

S.Y — Auto-Transpose Sync

The Auto-Transpose Sync (S.Y) parameter enables/disables a function which coordinates progression thru the Auto-Transpose Repeats and Stages by different Sources. If multiple Sources are Cloning, the probable potential exists that due to differences in Basic Cycles that a harmonic dissonance could result as those Sources cycle thru the Repeats and Stages out-of phase with each other. This may or may not be desired.

Display	Meaning	Description
OF	Off	Progress of the Sources thru the Auto-Transpose Repeats and Stages is independent per Source. Each Repeat contains exactly one Basic Cycle.
On	On	Progress of *all* Sources thru the Auto-Transpose Repeats and Stages is linked to that of the *active* Source with the highest priority as defined by the following order: The Record Buffer, then keyboard Zone 1, keyboard Zone 2. This Source is called the "driving" Source, and it proceeds thru its own Auto-Transposition normally, with each Repeat containing exactly one Basic Cycle. For the Synced Sources, the Auto-Transpose Repeat is "de-coupled" from the Basic Cycle (which proceeds continuously for each Source), and instead becomes "synced" to the driving Source Repeats.

r.i — Recursion Interval

The Recursion Interval (r.i) parameter specifies the fixed transpose amount to be added to all Source notes at each Repeat of a Stage(other than the first). The Recursion Interval is specified relative to Middle C (displayed as "C3"), and may be defined using the note-number shortcut described in "Edit Mode". Recursions are enabled by selecting a Recursion Interval other than C3, and result in upward Recursions for notes greater than that and downward Recursions for notes less than that. For example selecting C#3 will result in each successive Repeat being transposed up one additional semi-tone.

n.t — Number of Auto-Transpose Stages

This parameter (n.t) selects the number (up to 8) of Auto-Transpose Stages will be used by the current program.

E.t — Current Edit Stage

The Current Edit Stage (E.t) parameter selects which Stage will be edited by the Interval and Repeats parameters. It may be any Value from 1 to 8.

i.n — Interval

The Interval (i.n) parameter defines the fixed transpose interval to use as the basic transpose amount for the Stage selected by the Current Edit Stage (Et) parameter. It is specified relative to Middle C (displayed as "C3"), and may be defined using the note-number shortcut described in Section 7.2 on "Display Conventions/Shortcuts".

r.E — Repeats

The Repeats (r.E) parameter specifies how many Repeats to execute for the Stage selected by the Current Edit Stage (Et) parameter. It may be any Value from 1 to C8 (128).

13.2 AUTO-DOUBLE

The Cyclone has the ability to automatically generate additional notes at fixed intervals (e.g. octaves) for each Source note while Cloning, i.e. Auto-Doubling. The Doubled notes are *not* counted when processing the Mode parameter, and are generated at the same velocity as the Cloned Source note.

n.d — Number of Doubles

The Number of Doubles (n.d) parameter specifies how many of the eight available Doubles to generate, starting with the first as viewed/edited by the Current Edit Double (E.d) parameter. It may be any Value from 0 to 8, with 0 indicating that no Auto-Doubles will be generated.

E.d — Current Edit Double

The Current Edit Double (E.d) parameter selects which Double will be edited by the Double Interval and Channel parameters. It may be any Value from 1 to 8.

i.n — Double Interval

The Double Interval (i.n) parameter defines the interval relative to to the Cloned Source note at which to generate a Double note. It is specified relative to Middle C (displayed as "C3" when "Enter" is pressed), and may be defined using the note-number shortcut described in "Edit Mode".

C.II — Channel

The Channel (CH) parameter defines the MIDI Channel on which to transmit the Double note. Pressing "Enter" permits the selection of the following options:

Display	Meaning	Description
1···16	MIDI Channel	The Double note is transmitted on the indicated Channel.
Sr	Source	The Double note is transmitted on the same Channel as the Cloned Source note.

13.3 AUTO-MUTATE (MODULATIONS)

The Cyclone has the unique capability to automatically "Mutate" (modulate) three important attributes of a Clone (note-on Velocity, Tempo, and Pulse Duration) in response to real-time input from the controller keyboard, without manually editing the corresponding parameters.

n.L — Note Loudness/Velocity

The Note Loudness/Velocity (n.L) parameter provides both the manual editing of the note-on velocity, and the enabling of its Auto-Mutation. (The note-on velocity is often used in the voicing instrument to control loudness. Ever try to get a "V" in a 7-segment display?).

Display	Meaning	Description
rC	As Received	The note-on velocity transmitted for a Cloned note will be the same as that originally received with the Source note. For notes in the Record Buffer, the recorded velocity will be used, while for notes held in Zones 1 and 2, the velocity received at the time of the key-strike will be used.
Pr	Pressure	The note-on velocity transmitted for a Cloned note will be equal to the value of the Pressure control on the master keyboard at the time of transmission.
bn	Bender	The velocity transmitted for a Cloned note will be equal to the value of the Bender control on the master keyboard at the time of transmission.
1···C7	Fixed	The velocity transmitted for a Cloned note will be the indicated value. (Note that Values above 99 are displayed in "deciheximal").

The Cyclone uses the nominal value of 64 for the release velocities of Cloned notes.

t.A — Tempo Modulation Amount

The Tempo Modulation Amount (t.A) parameter defines the intensity and sense (direction) of the modulation to be applied to the Tempo in response to changes by the Tempo Mod Controller(described below). The range of Values is from 0 to 32. A Value of 16 is used to defeat Tempo Modulation. Amounts less than 16 transform positive Tempo Mod Controller values (e.g. pitch bend up) into a slower Tempo, while Amounts greater than 16 transform positive Tempo Mod Controller values into a faster Tempo.

t.C — Tempo Modulation Controller Number

The Tempo Modulation Controller Number (t.C) parameter selects the MIDI Controller which will be used as the Tempo Modulation Controller.

Display	Meaning	Description
Pr	Pressure	Keyboard Channel Pressure will control Tempo Modulation.
bn	Bender	The Bender will control Tempo Modulation. Negative Bender values reverse the sense of the modulation.
0···97	Controller	The indicated general purpose MIDI Controller will control Tempo Modulation.

d.A — Duration Modulation Amount

The Duration Modulation Amount (d.A) parameter defines the intensity and sense (direction) of the modulation to be applied to the Pulse Duration in response to changes by the Duration Mod Controller.

The range of Values is from 0 to 32. A Value of 16 is used to defeat Duration Modulation. Amounts less than 16 transform positive Duration Mod Controller values into a shorter Pulse Duration, while Amounts greater than 16 transform positive Duration Mod Controller values into a longer Pulse Duration. This parameter has an effect only when Cloning in a Pulse Rhythm other than tuplet.

d.C — Duration Modulation Controller

The Duration Modulation Controller Number (d.C) parameter selects the MIDI Controller which will be used as the Duration Modulation Controller.

Display	Meaning	Description
Pr	Pressure	Keyboard Channel Pressure will control Duration Modulation.
bn	Bender	The Bender will control Duration Modulation. Negative Bender values reverse the sense of the modulation.
0···97	Controller	The indicated general purpose MIDI Controller will control Duration Modulation.

Chapter 14
PEDALS

One of the most exciting performance features of the **Cyclone** is its programmable pedals. In all there are eight pedals, four local pedals and four externally controlled pedals via MIDI. These eight pedals can be assigned to any parameter or switch on the **Cyclone's** front panel. Of the eight, the four specified as internal and external pedals 3 and 4 are programmable with each program, so their functions can be set to whatever is useful for the particular program. The other four, internal and external pedals 1 and 2 are set once for all programs and are always active.

Note: All internal pedal jacks are for switch type pedals. Polarity of pedal is detected at power on. Make sure pedals are installed before power is applied.

Because pedals 3 & 4 are programmable, they are accessed in the Program section under the Page "Control Options...", while Pedals 1 & 2 are accessed through the "Pedals 1 & 2..." Page in the MASTER section. In addition, the assignment of MIDI controllers to External Pedals is done in the "MIDI..." Page.

In the "Control Options..." Page, the parameters are:

P.3	Programmable Local Pedal 3
P.4	Programmable Local Pedal 4
E.3	Programmable External Pedal 3
E.4	Programmable External Pedal 4

In the "Pedals 1 & 2..." Page, the parameters are:

P.1	Programmable Local Pedal 1
P.2	Programmable Local Pedal 2
E.1	Programmable External Pedal 1
E.2	Programmable External Pedal 2

In the "MIDI..." Page, the parameters are:

C.1	Controller number assigned to External Pedal #1 (00-95)
C.2	Controller number assigned to External Pedal #2 (00-95)
C.3	Controller number assigned to External Pedal #3 (00-95)
C.4	Controller number assigned to External Pedal #4 (00-95)

The functions that the pedals can perform include
- Editing any parameter
- Simulating any front panel switch
- Program chaining
- Sustain / Sostenuto Pedal Functions
- Tempo Tap Input
- External Sync Input (Pedal 2 Only)
- Audio Click Output (Pedal 1 Jack Only)

Pedal Function Listing

Display	Name	Description
IC	Increment	Used to increment the value of the parameter selected.
DC	Decrement	Used to decrement the value of the parameter selected.
OE	One-Shot Edit	Depressing the pedal causes the selected parameter to change to a new value. Releasing the pedal has no effect.
LE	Latched Edit	Depressing the pedal causes the selected parameter to change to a new value.Depressing the pedal again causes the parameter to change back to its original value
HE	Hold Edit	Depressing the pedal causes the selected parameter to change to a new value, while releasing the pedal causes the parameter to change back to its original value
SS	Single Switch	Used to simulate any button on the Cyclone's front panel , as though the button is tapped when the pedal is pressed Nothing occurs when pedal is released.
DS	Double Switch	Used to control any button on the Cyclone's front panel. Similar to Single Switch except when a pedal is depressed simulation of the button being pressed occurs and when the pedal is released simulation of the button being released occurs.
CH	Chains	Every SETUP # in the Cyclone has an alternate SETUP #. We designed this feature to allow the flexibility of being able to switch around to different SETUP# instead of having to program all your SETUP # in order of which you want to use.
SU	Sustain	Holds the notes in all zones by deferring Note Offs until the pedal is released.
So	Sostenuto	Holds any notes in all zones which are already gated when the pedal is depressed. Notes played while the pedal is pressed are played normally. When the pedal is released, the held notes are released.
tt	Tempo Tap	Accepts taps at quarter notes to set the tempo. See chapter 10 for more information.

24	24 ppq Ext. Sync	
48	48 ppq Ext. Sync	
96	96 ppq Ext. Sync	(Pedal 2 Only) These functions allow the use of pedal 2 as a sync input for sychronizing to the high resolution clocks of certain sequencers and drum machines. The input must be a positive pulse greater than 1 volt and longer than 100 uSec. This input is not recommended for audio inputs.
CL	Click Out	(Pedal 1 Only) This function allows the pedal 1 jack to be used as an audio metronome output jack. When recording a rhythm with record enabled and clone enabled, a 3 volt pulse is produced for 1 mSec on each quarter note.

Parameter Edit Example

A simple example of how to use one of these pedals might be to enable auto-transposition while pedal 3 is pressed. Since we are using pedal 3 this function will only be used for this program.

- Press button 4 until you reach PEDALS. *P.1* shows in display. *P.1* means we are working on Pedal 1 now. Use the > button to choose Pedal 3 displayed as **P.3.**

- Press ENTER button. For this example use < or > to select *HE* in the display. This means we are setting pedal 3 to be a "held edit" type pedal. This type of pedal function edits one parameter only as long as the pedal is held down. When the pedal is released, the parameter changes back to its original value.

- Press and hold pedal 3 down. Select the Auto-Transpose Enable in the usual way: While still holding the pedal down, press button 3 to get to the "Auto-Xpose..." page. You will see that the display looks like things are happening normally. Use the < or > buttons to go to *A.t* and press "Enter". Now set the value you would like to have when the pedal is held, in this case *On*, then release the pedal. The pedal is now assigned to turn on the Auto-Transpose function. Use the < or > buttons to turn off Auto-Transpose so that when pedal 3 is not held, Auto-Transpose will be disabled..

- Press the pedal. You will notice that while the pedal is held, auto transposition is enabled, turning off when the pedal is released.

Program Chain Operation

*   Select the first program in the chain.

*   Select parameter CP (Chain/Map Program) in the "Control Options..." page and set it to the next program number in the chain. Store the modified program.

*   Select the next program in the chain, select the Chain/Map Program parameter, set it to the program number which follows it in the chain. Store the modified program.

*   Repeat the previous operation for each step in the chain.

*   Next, we need to assign one of the eight pedals to CHAIN MODE. Lets use Pedal 2 (*P.2*).

*   Press button 5 until you reach "MIDI..." Use the < or > buttons until you reach *P.2*.

*   Press ENTER. Use the < or > buttons to select *CH* in the display.

*   Press ENTER. Pedal #2 is now assigned to CHAIN SELECT.

*   Return to the first program in the chain. Pressing pedal 2 will step through the chained programs.

Switch Simulation Operation

*   Press button 5 to get to "MIDI..." Use the < or > buttons to select which pedal you want to use.

*   Press ENTER. Use the < or > button to select either *SS* (Single Switch) or *DS* (Double Switch).

*   Depress and hold the pedal down. Now press and hold the button you want the pedal to simulate.

*   Release the pedal (display will show *SS* or *DS* depending on which one you selected). Release the button. Pedal is now assigned to the button.

Chapter 15

MASTER Parameters & Functions

The Master Parameters define the detailed behavior to expect from the Master Functions. The following sections are organized to present information according to the general layout and functional breakdown of the Edit Mode Pages on the Front Panel, allowing quick access to the function of interest.

15.1 "MIDI..."

The MIDI parameters permit you to customize the Cyclone's MIDI functions for both transmit and receive operations to best suit your MIDI requirements. When "MIDI..." is selected, pressing the < and > keys accesses the unit's seven MIDI parameters. In this Page, you are able to set the Cyclone's:

Parameter	Displayed as...	Value Range/Status
Basic Channel	b.C	1···16, plus OMNI Mode
MIDI Echo	E.C	On or Off
MIDI Clock	C.L	On or Off
MIDI Pedal 1	E.1	00···97
MIDI Pedal 2	E.2	00···97
MIDI Pedal 3	E.3	00···97
MIDI Pedal 4	E.4	00···97

As with other Cyclone functions, when the desired parameter is selected, pressing "Enter" gets you into the Value/Status mode. Then pressing the < or > keys lets you select the desired numeric Value or Status. When the desired Value or Status is displayed, pressing "Enter" again exits the mode and returns the display to the parameter name.

b.C — Basic Channel
The Basic Channel parameter selects the MIDI Channel on which the Cyclone:

- Receives MIDI Notes and Controllers, and Program Change messages.

- Transmits Cloned/Held notes when the corresponding Source Destination is set to the Basic Channel.

- Re-transmits notes received in Zones 1 and 2 when not Cloning/Holding and the corresponding Source Destination is set to the Basic Channel.

The available values are MIDI Channels 1...16, plus OMNI Mode (displayed as **On**) which means that the Cyclone will receive on any Channel. When in OMNI Mode, the **Cyclone** will transmit on Channel 1 for all situations described above. This is important to remember because if the **Cyclone** has been set to transmit to a Destination on the Basic Channel or any Channel higher than 1 (see Chapter 5 "Source/Dest..."), the **Cyclone** will switch automatically to transmit on Channel 1 when OMNI Mode is selected. This is an operational consideration designed to simplify the **Cyclone**'s MIDI section when OMNI Mode is selected. Be careful!

E.C — MIDI Echo

Since the **Cyclone**, like many other MIDI processors, does not have a MIDI Thru port, there must be some means to pass MIDI data coming from your Master controller to the Slaves when necessary. MIDI "Echo" is the function that permits the MIDI Out jack to act as if it were a Thru port when the **Cyclone** is transmitting data from its own memory. This way, playing your Master in real time while the **Cyclone** is running will be sent out the MIDI Out jack to your Slaves all at the same time.

The Echo parameter, displayed as E.C, controls whether MIDI Channel data received by the **Cyclone** is re-transmitted automatically out the **Cyclone**'s MIDI Out port.

OF	Off	Channel Data received at the MIDI Input is not echoed to the MIDI Output.
On	On	Channel Data received at the MIDI Input is echoed if: 1) it is not on the Basic Channel, or 2) it is not a note message which falls within the Zone Limits of Zone 1 or Zone 2.

MIDI Echo is *not* a time delay function. It is simply the ability of the unit to combine incoming received MIDI data with internally generated data. Please also note that MIDI System data is always echoed, whether this function is turned on or off. And like all other **Cyclone** functions, the Echo function, or the lack thereof, is defeated when the **Cyclone** is disabled (display shows "- -").

C.L — MIDI Clock

If the **Cyclone** is being mastered by a Sequencer or Drum Machine, it very likely will be receiving MIDI Timing Clock as well as Notes and Controller information. In other cases, the **Cyclone** may be transmitting MIDI Timing Clock to another device like a MIDI Sequencer or Drum Macine. In many MIDI setups this is very useful, since the **Cyclone** generates its own Clock data (see Chapter 10 on "Tempo") in addition to being able to respond to incoming MIDI Clock from another device.

The MIDI Clock parameter controls the response and transmission by the **Cyclone** of MIDI Clock, Start Command, and Stop Command messages:

OF	Off	The **Cyclone** ignores MIDI Clock , Start, and Stop messages altogether.
Sn	Send	The **Cyclone** sources MIDI Clock, Start, and Stop messages. MIDI Start and Stop commands are generated to co-incide with the status of the Clone function, regardless of how it is activated/deactivated. MIDI Timing Clock data is generated whenever internal or external Sync is happening (see "Pedals 1 & 2 Functions").
rC	Receive	The Cyclone uses MIDI Clock messages to establish the Tempo of all Cloning functions except Live Trigger rhythms. Start and Stop messages control the status of the Clone function. Selecting External Sync (24, 48, 96) for Pedal 2 overrides this selection, and vice-versa. De-selecting this option will re-enable External Sync if it is programmed; otherwise the Cyclone defaults back to Internal Sync.

E.1, E.2, E.3 and E.4 — MIDI Pedal Controllers

As mentioned in Chapter 14, the **Cyclone** permits you to use up to eight switch-type pedals to control certain fucntions. As you program the various functions of the unit, you will notice that the parameters for four of these Pedals are labelled "P" ("physical"), indicating that they are used for local control and are plugged into the **Cyclone's rear** panel. The other four are labelled "E" ("external") for MIDI control from the Master controller.

These are the four External MIDI Pedal Controller Number parameters. They tell the **Cyclone** which MIDI Controller on the Master to use when the functions associated with the External Pedals have been selected. For example, if you assign MIDI Controller Number 64 to E.1, that means that every time E.1 is used in a Program, it will be activated by the Master's Sustain Pedal (MIDI Controller #64 is commonly used for Sustain Pedal). If E.1 is set to MIDI Controller #7, the Master's Volume Pedal is used instead.

Operation

When "E.1", "E.2", "E.3" or "E.4" is displayed, pressing the "Enter" key switches the display to show that Pedal's current MIDI Controller value.

Use the < or > keys to change the Value (immediate edit). Range is from 00 to 97. MIDI Controller Values from 98 through 127 are not appropriate for this function and are not available.

For additional information on setting up pedals and their uses, see chapter 14.

15.3 "DUMP/LOAD..."

The Cyclone permits you to save its memory externally. This means that you are able to dump the contents of the unit's 32 Programs to a computer equipped with a MIDI interface and Oberheim Cyclone System Exclusive data, or another Cyclone. The MIDI implementation codes for the unit are printed in the back of this manual.

You are also able to load Programs from an external source into the Cyclone . This DUMP/LOAD capability provides a way of backing up your work in the likely event that you create more than 32 Programs or in the unlikely event of a malfunction.

Operation:
Press the MASTER button four times to enter DUMP/LOAD mode.

Use the the < or > buttons to select the desired memory sub-function.

Press ENTER. The display will switch to read "*Go* " with a flashing dot.

Press ENTER again to execute the sub-function. During the time it takes to complete the routine, the display will continue to read "*Go* " but the flashing dot will disappear. Note that some functions take less than one second. When the process is completed, the display will revert back to the sub-function abbreviation.

Display	Translation	Description
S O	Send One	The Cyclone will transmit the last selected SETUP to the receiving device.
S G	Send Global	The Cyclone will transmit the data stored in MIDI and MASTER to the receiving device.
S A	Send All	The Cyclone will transmit all Programs, MIDI data and MASTER data to the receiving device.
S E	Send Edit	The Cyclone will transmit any edits made to the last selected SETUP to the receiving device.

Note: The Cyclone will receive any MIDI data sent to it regardless of what operating mode it is in.

Chapter 16

Reference Data

16.1 Factory Default Programs & Master Parameters

Factory Programs (Rev 1.0)

Pgm	#Description
00	Plain vanilla arpeggiation: Pulse Rhythm, Forward Order, Fixed 1 Mode, Keyboard only, Duration 50%
01	Same as 00 plus: Octave Auto-xpose (1 up and 1 down), Duration 200%, As Received Order
02	" " " " : Fixed 2 Mode (2 notes at a time), Cycle Reset Off
03	" " 01 " : Two Zones active at once; split at C3,
04	Same as 01 plus: Two doubles, one down an Octave, one up a fifth.
05	Same as 00 plus: Control Zone in lower octave and a half provides continuous manual transpose, relative to C2.
07	" " 01 " : Four chromatic recursions
08	Same as 01 with Replace Gated
09	Same as 00 with Pressure mod of duration and velocity.
10	In the style of Emerson: Strange Xpose in Fixed 2
11	Same as 00 with random oreder and mode.
12	Plain vanilla sequence: Recorded Rhythm, Forward Order, As Recorded Mode, Record Buffer only.
13	Same as 00 with recorded rhythm, order received
14	Same as 00 with live triggers, recorded pitches.
15	Dual Arpeggiation with tuplet timing and replace gated record mode.

16.2 Global Parameters

Basic Channel: 1
Echo: On

Pedal 1: Click out
Pedal 2: Program Chain/Step
Pedal 3: Clone Start/Stop (in Play Mode)
Pedal 4: Tempo Tap

16.3 Editable Parameters in Factory Programs

The following parameters in the Factory Programs may be edited. When any of these parameters are edited in a Factory Program, the user will only be able to store the modified program back to the same program (thereby updating the factory program) or to one of the user programs. If any other parameters are modified in a factory program, the user will be required to store the resulting program in one of the user program locations.

- Current state of all play mode flags: Clone On/Off, Cycle On/Off, Manual Ctl. On/Off, Record Ready/Pause/Off/Hold.
- Tempo
- Tempo Modulation Source
- Duration Modulation Source
- Destination of Record Buffer
- Destination of Keyboard Zones 1 and 2
- Chain Program Number
- Internal Pedal 3 and 4 Definitions
- External Pedal 3 and 4 Definitions

16.4 Front Panel Mnemonics

Program Edit Block

Page	Parameter/Function Display	Meaning	Value Display	Meaning
Rhythm		Rhythm - *Trigger Source*	rC	Recorded [Record Buffer]
			PU	Pulse [see "Timing" page]
			LS	Live Single Trigger
			LP	Live Poly Trigger
Order		Order - *Which Notes*	rF	Received Forward
			rb	Received Backward
			Fb	Forward-then-Backward
			bF	Backward-then-Forward
			UP	Up; Increasing Note #
			dn	Down; Decreasing Note #
			Ud	Up-then-Down
			dU	Down-then-Up
			rn	Random
Mode		Mode - *# of Source Notes per Trigger*	rC	As Recorded [in Rec Buffer]
			F1..F8	Fixed
			AL	All (Chord/Cluster)
			P2..P8	Proportional
			r2..r8	Random
Tempo		Tempo+2	05..J9	10..398 Beats per Minute
			EC	MIDI/External Sync
Timing...	Pn	Pulse Note	4	1/4th note
			8	1/8th note
			12	1/8th note triplet
			16	1/16th note
			24	1/16th note triplet
			32	1/32nd note
			48	1/32nd note triplet
			96	1/64th note triplet
			tU	Tuplet (proportional)
	dU	Duration	01..32	16ths of Pn (16 = 100%)
	Li	Link	oF	Off
			on	On
Cycling...	SY	Sync-to-Trigger	oF	Off
			CL	Clock
			or	Order
			CY	Cycle
	rS	Mode Reset	oF	Off
			on	On
	iA	Invert Alternate	oF	Off
			on	On

Auto-Xpose...	A t	Auto-Transpose Mode	o F o n i U id	Off On (Normal) Inversions Up Inversions Down
	S Y	Auto-Transpose Sync	o F o n	Off On
	r i	Recursion Interval	C=..G8	Note # (C3 = no transpose)
	E t	Current Edit Stage	01..08	Stage # for in and rE
	i n	Transpose Interval	C=..G8	Note # (C3 = no transpose)
	rE	Stage Repetitions	01..C8	# of Repeats
Auto-Double...	nd	Number of Doubles	00..08	0 = No Doubles
	Ed	Current Edit Double	01..08	Double # for in and CH
	i n	Double Interval	C=..G8	Note # (C3 = same note)
	C H	Double MIDI Channel	1..16 Sr	Fixed Channel Same as Source Dest Chan
Auto-Mutate...	n L	Note Loudness/ Velocity	rC Pr b n 01..C7	As Received/Recorded From Channel Pressure From Bender Wheel/Lever Fixed
	t A	Tempo Mod Amount	00..32	Mod Amount (16 = no Mod)
	t C	Tempo Mod Controller	Pr b n 00..97	Channel Pressure Bender Wheel/Lever MIDI Controller #
	dA	Duration Mod Amount	00..32	Mod Amount (16 = no Mod)
	dC	Duration Mod Cntrlr	Pr b n 00..97	Channel Pressure Bender Wheel/Lever MIDI Controller #
Rec/Hold Options...	Eb	End Beat	01..64	Timing Pattern Size [1/4th-notes]
	rH	Record/Hold Mode	rE rG Ad	Replace Replace Gated Add
	A C	Auto-correct/Step Size	4 8 12 16 24 32 48 oF	1/4th note 1/8th note 1/8th note triplet 1/16th note 1/16th note triplet 1/32nd note 1/32nd note triplet 1/64th note triplet

Control Options...				
	C t	*Control Zone* Manual Control Function	t G t C dG dC	Transpose Gated Transpose Continuous Double Gated Double Continuous
	L n	Control Zone Lo Note	C =..G 8	Note # [Clamped @ Hn]
	Hn	Control Zone Hi Note	C =..G 8	Note # [Clamped @ Ln]
	b n	Base Note	C =..G 8	Note # for zero tranpose
	A U	Audible Control Zone	o F o n	Off On
	Pr	Manual Transpose Priority	L o H i o L n E	Lowest Control Note Highest Control Note Oldest Control Note Newest Control Note
	C P	*Pedal Functions* Chain/Map Program	0 0..3 1 (99)	Program # to Chain/Map to
	P 3 **P 4** **E 3** **E 4**	Local Pedal 3, Local Pedal 4, External Pedal 3, External Pedal	C H S S d S i n dE o E L E H E S U S o t t	Chain Program Single Switch Double Switch Increment Decrement One-shot Edit Latched Edit Held Edit Sustain Sostenuto Tempo Tap
Source/Dest...	**dr** **d1** **d2**	*Destinations* Record Buffer, Keyboard Zone 1, Keyboard Zone 2	o F b C 1..1 6	Off/Source Disabled Basic Channel Fixed Channel
	L 1	*Keyboard Zone Limits* Zone 1 Lo Note	C =..G 8	Note # [Clamped @ H1]
	H 1	Zone 1 Hi Note	C =..G 8	Note # [Clamped @ L1]
	L 2	Zone 2 Lo Note	C =..G 8	Note # [Clamped @ H2]
	H 2	Zone 2 Hi Note	C =..G 8	Note # [Clamped @ L2]

Master Edit Block

Page	Parameter/Function		Value	
	Display	Meaning	Display	Meaning
MIDI...				
	bC	Basic Channel	1..16	Channel #
			on	Omni On [Transmit Chan 1]
	EC	Echo	oF	Off
			on	On
	CL	Clock	oF	Off
			Sn	Send
			rC	Receive
	E1	Ext Ped 1 Controller,		
	E2	Ext Ped 2 Controller,		
	E3	Ext Ped 3 Controller,		
	E4	Ext Ped 4 Controller	00..97	MIDI Controller #
Pedal 1 & 2...				
	P1	Local Pedal 1 Function,		
	P2	Local Pedal 2 Function,		
	E1	Ext Pedal 1 Function,		
	E2	Ext Pedal 2 Function	CH	Program Chain
			SS	Single Switch
			dS	Double Switch
			in	Increment
			dE	Decrement
			oE	One-Shot Edit
			LE	Latched Edit
			HE	Held Edit
			SU	Sustain
			So	Sostenuto
			tt	Tempo Tap
			CL	Click Out [P1 only]
			24	24 ppq Ext Sync [P2 only]
			48	48 ppq Ext Sync [P2 only]
			96	96 ppq Ext Sync [P2 only]
Dump/Load...				
		Send MIDI SysEx		
	So	Send Current Program,		
	SG	Send Globals (Master),		
	SA	Send All,		
	SE	Send Edit/Rec Buffer	Go	Prompt [press "Enter"]
			Er	Error
		RAM Card		
	dC	Dump All,		
	LC	Load All,		
	FC	Format Card	Go	Prompt [press "Enter"]
			Er	Error

Program Parameters

Rhythm *Trigger Source*
rC Recorded [Record Buffer]
PU Pulse [see "Timing" page]
LS Live Single Trigger
LP Live Poly Trigger

Order *Which Notes*
rF	Forward	UP	Up
rb	Backward	dn	Down
Fb	Forward/Backward	Ud	Up/Down
bF	Backward/orward	dU	Down/Up
rn	Random		

Mode *# of Source Notes per Trigger*
rC	As Recorded	P2..P8	Proportional
F1..F8	Fixed	r2..r8	Random
AL	All (Chord/Cluster)		

Tempo *Tempo÷2:*
05..J9 10..398 Beats per Minute
EC MIDI/External Sync

Timing...
Pn Pulse Note
4	1/4th note	48	1/32nd note triplet
8	1/8th note	96	1/64th note triplet
12, 16, 24, 32 etc.		tU	Tuplet

dU Duration
01..32 16ths of Pn (16 = 100%)
Ll Link
oF Off   on On

Cycling...
SY Sync-to-Trigger
| oF | Off | or | Order |
| CL | Clock | CY | Cycle |

rS Mode Reset
oF Off   on On
IA Invert Alternate
oF Off   on On

Auto-Xpose...
At Auto-Transpose Mode
| oF | Off | IU | Inversions Up |
| on | On (Normal) | Id | Inversions Down |

SY	Auto-Transpose Sync	oF	Off	on	On
r	Recursion Interval	C=..G8 Note #			
Et	Current Edit Stage	01..08 Stage # In & rE			
In	Transpose Interval	C=..G8 Note #			
		(C3 no transpose)			
rE	Stage Repetitions	01..C8 # of Repeats			

Auto-Double...
nd	# of Doubles	00..08	0 = No Doubles
Ed	Edit Double	01..08	Double #in and CH
In	Double Interval	C=..G8	Note # (C3 = same)

CH Double MIDI Chan
1..16 Fixed Channel
Sr Same as Source Dest Chan

Auto-Mutate...

nL Note Loudness/Velocity
rC As Recvd/Recorded
Pr From ChanPressure
bn From Wheel/Lever
01..C7 Fixed

tA	Tempo Mod Amt	00..32	Mod Amount (16 = no Mod)
		Pr	Chan Pressure
tC	Tempo Mod Cntrlr	Pr	
	bn	Bender Wheel/Lever	
	00..97	MIDI Cntrlr #	
dA	Duration Mod Amt	00..32	Mod Amt (16 = no Mod)
		Pr	Chan Pressure
dC	Duration Mod Cntrlr	Pr	Chan Pressure
	bn	Wheel/Lever	00..97 MIDI Cntrlr #

Rec/Hold Options...
Eb End Beat   01..64 Timing Pattern Size [1/4th-notes]

| rH | Record/Hold Mode | rE | Replace |
| | rG | Replace Gated | Ad | Add |

AC Auto-correct/Step Size
4	1/4th note	16, 24, 32, 48 etc.
8	1/8th note	oF	1/64th note triplet
12	1/8th note triplet	

Control Options...

Control Zone
Ct Manual Control Function
tG Transpose Gated
tC Transpose Continuous
dC Double Continuous
dG Double Gated
Ln	Control Zone Lo Note	C=..G8 Note #
Hn	Control Zone Hi Note	C=..G8 Note #
bn	Base Note	
	C=..G8 Note # for zero tranpose	

AU Audible Control Zone
oF Off   on On
Pr Manual Transpose Priority
| Lo | Lowest | oL | Oldest |
| Hi | Highest | nE | Newest |

Pedal Functions
CP Chain/Map Program
00..31 Program # to Chain/Map to
P3 Local Pedal 3,
P4 Local Pedal 4,
E3 External Pedal 3,
E4 External Pedal
CH, LE, SS, HE, dS, SU, In, So, dE, tt, oE
(see "Pedal 1& 2")

Source/Dest...

Destinations
dr Record Buffer,
d1 Keyboard Zone 1,
d2 Keyboard Zone 2
oF Off/Source Disabled
bC Basic Channel
1..16 Fixed Channel

Keyboard Zone Limits
L1	Zone 1 Lo Note	C=..G8 Note #
H1	Zone 1 Hi Note	C=..G8 Note #
L2	Zone 2 Lo Note	C=..G8 Note #
H2	Zone 2 Hi Note	C=..G8 Note #

Master Edit Parameters

MIDI...
bC Basic Channel   1..16 Channel #
on Omni On [Transmit Chan 1]
EC Echo   oF Off   on On
CL Clock
oF Off   rC Receive
Sn Send
E1 Ext Ped 1 Controller,
E2 Ext Ped 2 Controller,
E3 Ext Ped 3 Controller,
E4 Ext Ped 4 Controller   00..97 MIDI Cntrlr #

Pedal 1 & 2...
P1 Local Pedal 1 Function,
P2 Local Pedal 2 Function,
E1 Ext Pedal 1 Function,
E2 Ext Pedal 2 Function

CH	Program Chain	oE	One-Shot Edit
SS	Single Switch	LE	Latched Edit
dS	Double Switch	HE	Held Edit
In	Increment	SU	Sustain
dE	Decrement	So	Sostenuto
tt	Tempo Tap		
CL	Click Out [P1 only]		
24	24 ppq Ext Sync [P2 only]		
48	48 ppq Ext Sync [P2 only]		
96	96 ppq Ext Sync [P2 only]		

Dump/Load...
Send MIDI SysEx
So Send Current Program,
SG Send Globals (Master),
SA Send All,
SE Send Edit/Rec Buffer
Go Prompt [press "Enter"]   Er Error

Perf/X by Oberheim
Made in the U.S.A.

cyclone